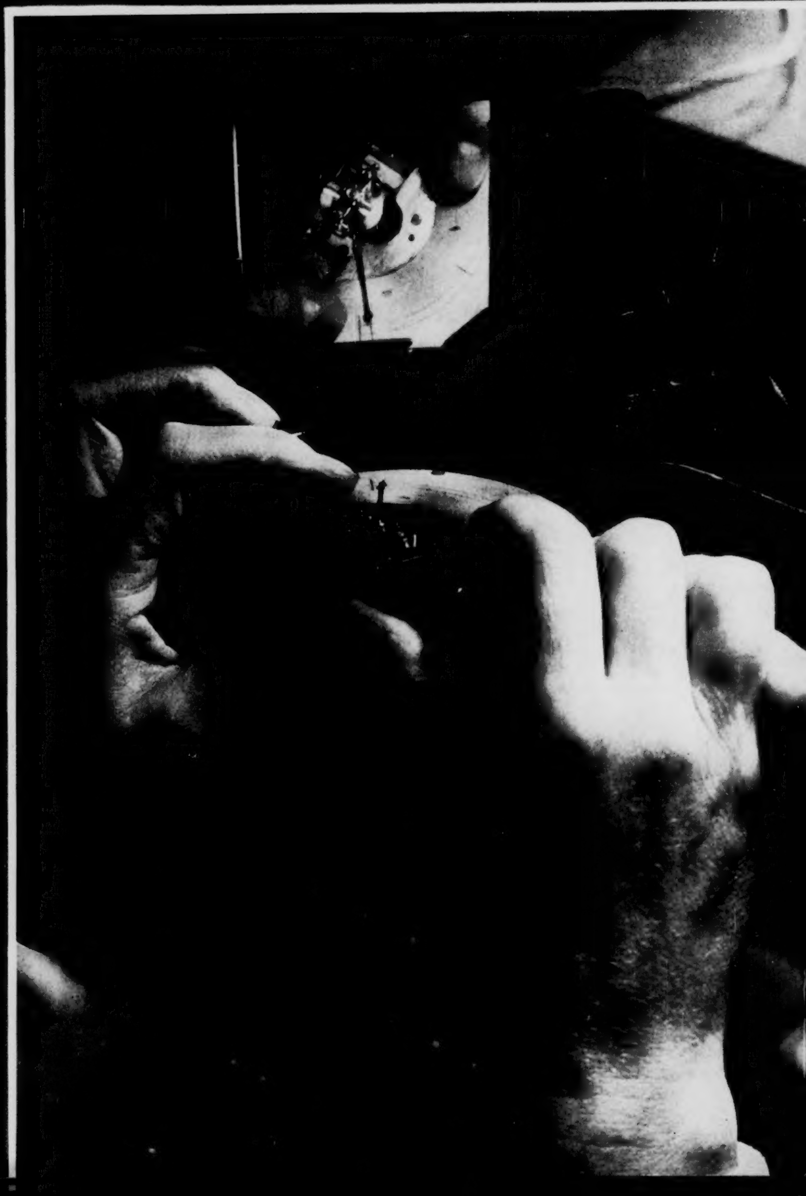
STANDARDIZATION

Formerly Industrial Standardization

News Magazine of the American Standards Association, Incorporated



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Readers Write

Safety Standards Requested

Public Service Company of Indiana, Inc
Indianapolis, Indiana

Gentlemen: The Central Indiana Chapter of the American Society of Safety Engineers is interested in making recommendations to the Indianapolis Public Library for literature, standards and codes. Can you advise me about the ASA codes that are available and what a complete book of the codes would cost our group?

RALPH J. YOUNG
Supervisor Accident Prevention

• • A segregated list of American Safety Standards begins on page 15 of the ASA price list. A complete set of these safety standards can be obtained for $37.50 per set. In order to keep safety engineers informed of new developments, the American Standards Association sends one copy of each new American Safety Standard to the national representative of each chapter of the American Society of Safety Engineers. One of these chapters—the Western Massachusetts chapter—gives special service to its community by placing copies of these standards on a special shelf in the public library.

Information Wanted on Toxic Dusts and Gases

Baltimore, Maryland

Gentlemen: We are interested in obtaining a booklet containing allowable concentrations of toxic dusts and gases. In looking at your price list (March, 1948), we find a few standards listed for individual contaminants but nothing containing this information on a complete range of hazardous dusts and gases. In fact, many of the elements or compounds, in which we are interested, are not listed.

Do you have, or do you know where we can obtain, one publication which will include allowable concentrations and symptoms or effects resulting from heavy exposures?

A. A. R.

• • As far as the ASA knows, there is no single booklet containing a complete list of allowable concentrations of toxic dusts and gases. The sectional committee on Maximum Allowable Concentrations of Toxic Dusts and Gases, Z37, realizes that there are many chemicals for which standards defining maximum allowable concentrations should be prepared. However, members of the committee believe that in many cases not enough experimentation with animals has been done or there has not been enough actual experience with

Company Members

More than 2100 companies hold membership either directly or by group arrangement through their respective trade associations

Readers Write

Continued

the chemicals to make it possible to set up a standard. American Standards on 18 toxic dusts and gases have been completed so far.

Non-Slip Floor Wax?

Lanair Chemical Corp
Chicago, Illinois

Gentlemen: We are interested in securing information as to what the coefficient of friction is in a "non-slip" type floor wax which is acceptable to insurance companies in general.

We understand that there is a definite standard which has been set for this purpose.

Your response will be greatly appreciated.

J. W. MOWREY, JR

• • As far as the ASA office can learn there is no such standard coefficient of friction. Some research has been done by the National Safety Council on slipperiness of floors in order to determine what coefficient of friction can be obtained, but so far the sectional committee working on slipperiness of walkway surfaces has not come to any solution of this problem.

A Correction And a Compliment from the Author

Lieutenant Commander Dale E. Fairchild, USN, writes to correct us—and very graciously to toss us a bouquet.

In giving names to initials, STANDARDIZATION erred in not giving the Aircraft Industries Association, Inc. its place in assisting at the standardization program of the Industrial College of Armed Forces. The American Institute of Architects was mistakenly substituted. Our apologies to all parties.

As a sop for our editorial pride, we are told that "the article is apparently creating substantial interest in the program," with inquiries for more information being received from several sides.

Our Front Cover

Adjusting a d-c instrument system. This is one of the many steps in the manufacture of electrical panel and switchboard instruments which are required in order for the product to meet the new American Standard, C39.1-1949. (See page 98). Picture by courtesy of Weston Electrical Instrument Corporation, Newark, N. J.

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In This Issue

ASA
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Ruth E. Mason, Editor
Advertising Representatives—Woolf & Elofson, 70 E. 45th St., New York 17, N.Y.

Standardization is dynamic, not static. It means not to stand still, but to move forward together.

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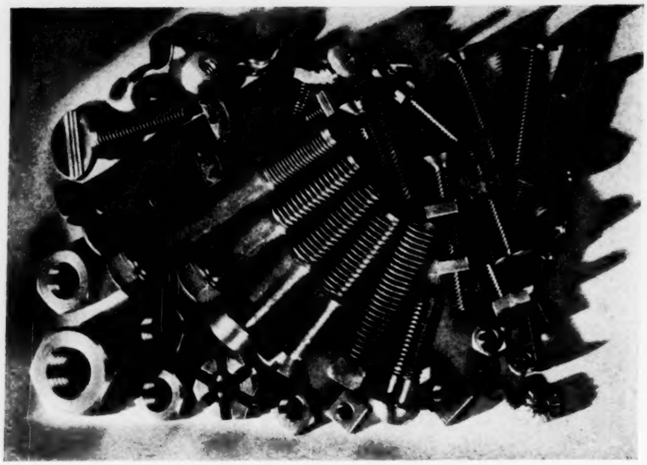


THREADS REVISED

The main features of the newly revised American Standard B1.1-1949 are briefly described below. Details are given in the analysis of the standard which starts on the opposite page.

The new American Standard for Screw Threads, B1.1-1949, covers Unified threads on which agreement has been reached between the United States, Great Britain and Canada, and American Standard threads. For some of the latter, unification is still being considered. The Unified threads comprise the coarse and fine threads in sizes of $\frac{1}{4}$ in. and upward, and selected diameter-pitch combinations. The three uniform-pitch series, with 8, 12 and 16 threads per inch, respectively, have been taken over from the 1935 standard and an extra-fine series has been added.

The new basic thread form, with a thread angle of 60 degrees, has a rounded root in the screw. The crest of the screw may be either flat or rounded. The new form is interchangeable with the old one and can be produced with the customary type of tools having flat crests when new.

The diameter-pitch combinations of the United coarse and fine series are the same as those in the 1935 standard, except that the pitch of the $\frac{1}{2}$ in. coarse thread has been changed from 13 to 12, and the pitch of the 1 in. fine thread, from 14 to 12 threads per inch. However, the $\frac{1}{2}''$-13 coarse thread has been retained as an American Standard, and the 1″-14 thread is listed as a selected diameter-pitch combination.

New classes of external threads (1A, 2A, and 3A) and internal threads (1B, 2B, and 3B) have been established to replace the old classes 1, 2 and 3 of the 1935 standard. The combination of classes 2A and 2B, with a pitch diameter allowance on the external thread (2A), is expected to cover most general purpose threads such as used on bolt, screws and nuts. To ease the transition, the widely used old classes 2 and 3 have been retained for the time being in the new standard.

The new American Standard covers a wide range of requirements, from cases where the designer finds it possible to use threads of the "regular" series, for which the limits of size are tabulated, to cases where he needs special threads whose limits must be computed by means of formulas.

New American Standard for Screw Threads Presents Unified Series

General interchangeability with present American practice is maintained

By John Gaillard
Mechanical Engineer
American Standards Association, Incorporated

THE NEW American Standard entitled Unified and American Screw Threads for Screws, Bolts, Nuts and Other Threaded Parts, B1.1-1949,[1] was approved by the American Standards Association on February 23, 1949, as a revision of the American Standard, Screw Threads for Bolts, Nuts, Machine Screws and Threaded Parts, B1.1-1935. The new standard covers Unified threads on whose nominal dimensions and limits of size agreement has been reached between the United States, Great Britain and Canada, and American Standard threads, for some of which such a unification is still being considered. The three countries concerned have decided that the results so far attained should be published at once as their new national standards.

The new American Standard B1.1-1949 will be reviewed here mainly for comparison with the old standard B1.1-1935. For the sake of brevity, the term "screw" will be used frequently in this article to designate any external thread and the term "nut" to designate any internal thread.

Basic Form of Thread. The basic form (maximum metal condition) of the Unified screw and nut, with a 60-degree angle of thread, is shown in Fig. 1. The screw has a rounded root and its basic depth of thread is 17/24 H (in which H is the height of the fundamental triangle), instead of 3/4 H in the 1935 standard. The crest of the thread may be flat (basic width 1/8 pitch) or rounded. The flat crest is preferred in American practice and the rounded crest in British practice. The root and crest of the nut are flat, with basic truncations of H/8 and H/4, respectively. The basic depth of engagement between screw and nut is 5/8 H, as in the 1935 standard.

Classes of Thread. The system of Unified threads is based on six classes of thread, each class being characterized by the amount of tolerance, or tolerance and allowance, specified. Classes 1A, 2A, and 3A apply to screws, and classes 1B, 2B, and 3B to nuts. The pitch diameter tolerances of all classes, and the pitch diameter allowances of classes 1A and 2A (which allowances are equal for a given nominal size) are shown in Fig. 2 for a 1-in. coarse thread. The old "classes of fit" 1, 2, and 3 of the 1935 standard are also represented. Contrasting with these old classes, for each of which the pitch diameter tolerances on the screw and nut were equal, a class B thread in the new standard has a 30 percent larger pitch diameter tolerance than the class A thread with the same numeral.

Origin of New Classes. The development of the A and B classes started with the class now designated by 2A. Industry felt the need for a thread fit similar to the old class 2, but having an allowance (minimum clearance) on the pitch diameter, mainly to avoid seizure in high-cycle wrenching commonly experienced with class 2. To remedy this trouble, class 2A was established and this was matched by class 2B. The combination of 2A with 2B is expected to be satisfactory for most general purpose threads, such as used on bolts, screws, and nuts. Classes 2A and 2B served as the basis for the development of two other combinations: 1A with 1B, to replace the old class 1, and 3A with 3B, giving a fit without a pitch diameter allowance, similar to old class 3.

Transition Not Difficult. The designer is free to use any combination of thread classes, new and old, suitable for his purpose. The diagrams of Fig. 2 show that transition from the old standard to the new should not cause great difficulty. For most practical purposes, the old class 1 can be replaced by the combination of 1A with 1B; the old class 2, by 3A with 2B; and the old class 3, by 3A with 3B. In addition, the new standard provides the general purpose combination, 2A with 2B. To ease the transition, the old classes 2 and 3, which are widely used, have

What the Designations Mean

UNC—American Standard Unified Coarse Thread
UNF—American Standard Unified Fine Thread
NC —American Standard Coarse Thread
NF —American Standard Fine Thread
NEF —American Standard Extra Fine Thread

[1] *The standard is being published by The American Society of Mechanical Engineers. Copies are expected early in April.*

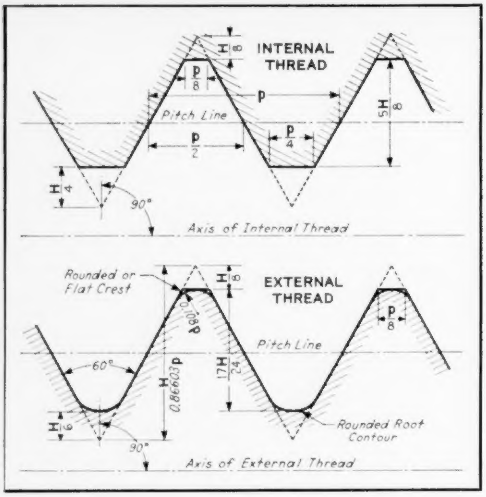


Fig. 1 Basic form of internal and external Unified Screw Threads (maximum metal condition)

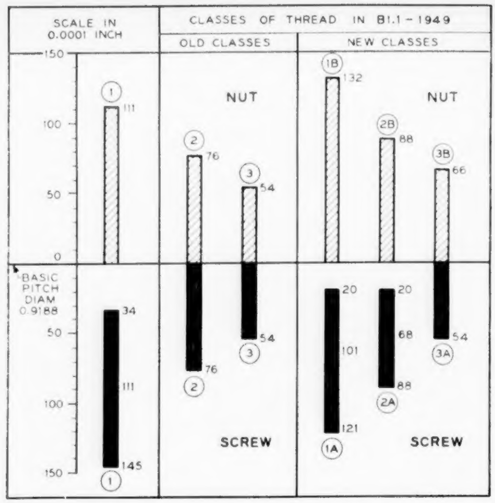


Fig. 2 Pitch diameter tolerances and allowances of old and new classes of thread applied to 1-inch coarse thread

been rétained in the new standard for the time being and the old class 1 (which is obsolete) is given in an appendix, for information only. Already there are indications that the old classes 2 and 3 will gradually be replaced by combinations of A and B classes.

Relations Between Classes. The relations between the pitch diameter tolerances and allowances of the new A and B classes of a given nominal size are listed below, based on the pitch diameter tolerance of class 2A as unity.

Class of Thread	*Pitch Diameter Tolerance*	*Pitch Diameter Allowance*
1A (Screw)	1.5	0.3
1B (nut)	1.95 (1.5 x 2B)	
2A (screw)	1	0.3
2B (nut)	1.3	
3A (screw)	0.75	
3B (nut)	0.975 (0.75 x 2B)	

Character of Fits. The character of the fits resulting from combinations between 1A and 1B, and between 2A and 2B, is shown in Fig. 3. The combination between 3A and 3B and the old classes 2 and 3 are represented in Fig. 4. These diagrams show also that the minimum minor diameter of the screw corresponds to a flat root with a width of 1/8 pitch and the maximum major diameter of the nut, to a flat root with a width of 1/24 pitch. This is the same set-up as in the 1935 standard and shows that, even though the root of the basic screw is rounded, the American manufacturer may start the production of an external thread (minimum metal condition) with a tool having a flat crest.

Extent of Unification. A Unified thread is printed in bold type and is designated by a symbol beginning with the letter U, indicating that it is the same as the British and Canadian threads with the same designation. The Unified Screw Threads comprise the coarse thread series, size range 1/4 to 4 in., inclusive; the fine thread series, range 1/4 to 1 1/2 in., inclusive; and preferred special threads of the A and B classes.

Unification of the coarse thread series involved adoption of the 1/2 in. size with 12 threads per inch, as given in the British Whitworth system. However, the 1/2"-13 thread has been retained as an American Standard. Therefore, the designer has the choice between two 1/2 in. coarse threads: 1/2"-12 UNC and 1/2"-13 NC. Unification of the coarse thread sizes below 1/4 in. (from 0.073 to 0.216 in., inclusive) is still under consideration. Therefore, these sizes are listed in the new standard as NC threads.

The fine thread series has been unified by changing the pitch of the former American Standard 1"-14 thread to 12 threads per inch. (The British have changed here from 10 to 12 threads.) However, those wishing to continue the use of the 1"-14 thread will find it under the Special Threads in the new standard. The fine thread sizes below 1/4 in. (from 0.060 to 0.216 in., inclusive) are listed as NF threads only, their unification still being under consideration.

The 8-pitch, 12-pitch, and 16-pitch threads given in the 1935 standard are listed also in the new one, and extra-fine threads (not given in the 1935 edition) have been added. Because of the wide use of the 8-pitch threads (8N), their limits of size are tabulated for classes 2A and 2B, together with those of the coarse and fine series. Limits of size for the extra-fine (NEF), 12-pitch (12N), and 16-pitch (16N) threads are given in the tables for selected diameter-pitch combinations. Some of these combinations also belong to the Unified threads.

Groups of Thread Data. The data in the new standard, consisting of tabulated values and formulas for computing limits of size, may be divided into four groups. The standard recommends that the designer begin by trying to use a thread listed in the first group. If none of these threads suits his purpose, he should try the second group, then the third, and finally the fourth. This procedure will reduce computations of thread limit to a minimum and also promote general uniformity of practice in industry.

First Data Group. This comprises the coarse (UNC and NC),

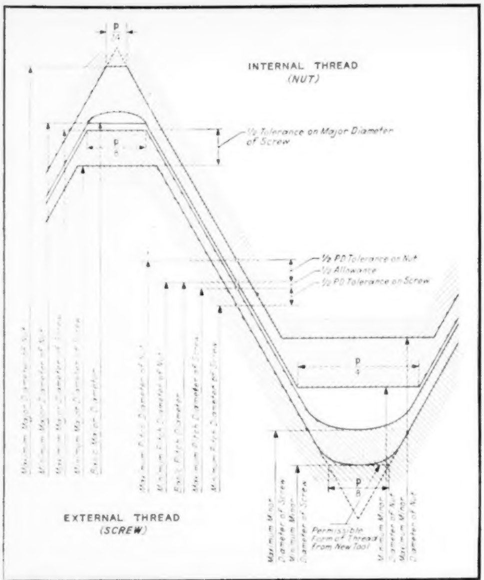


Fig. 3 General character of tolerances, allowances and crest clearances, Classes 1A, 1B, 2A, 2B. (not to scale)

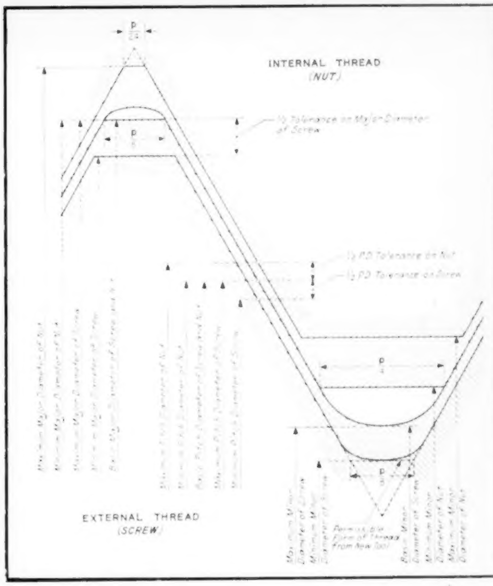


Fig. 4 General character of tolerances and crest clearances, Classes 3A, 3B, 2, 3. (not to scale)

fine (UNF and NF), and 8-pitch series, for all of which the limits of size are tabulated. For example, in size 1 1/8 in., the designer has a choice between 1 1/8"-7 UNC; 1 1/8"-8N, and 1 1/8"-12 UNF. However, in size 3/4 in., he will find only two "regular" threads, 3/4"-10 UNC and 3/4"-16 UNF, because the 8-pitch series does not go below 1 in.

Second Data Group. This group gives tables of selected diameter-pitch combinations. For each diameter listed, several pitches are given. For example in size 3/4 in., the designer will find here seven pitches not listed in the first group. These are: 12, 14, 18, 20, 24, 28, and 32 threads per inch. If neither the coarse 10-pitch nor the fine 16-pitch suit his purpose, he should find out if one of these selected combinations can be used. Complete data for these threads are tabulated, based on a length of engagement of 9 pitches and applicable to lengths of from 5 to 15 pitches.

Third Data Group. The standard also provides for cases where the designer's problem is still more special and is not covered by the second group. For example, he may need a threaded connection, nominal diameter 0.80 in., 32-pitch, classes 2A and 2B, length of engagement 9 pitches. No details of an 0.80 in. thread are found in the second group. However, another set of tables provides the following information for this special thread: pitch diameter allowance, class 2A: 0.0011 in.; pitch diameter tolerances, classes 2A and 2B: 0.0036 and 0.0047 in., respectively. From these data, the other limits of size may be computed by means of formulas given in an appendix.

Fourth Data Group. In an extreme case, the designer may need a thread, such as a 3/4 in., 80-pitch thread, for which the new standard does not tabulate pitch allowances or tolerances. (The finest 3/4 in. thread found in the third group has 64 threads per inch.) All of the limits of size must then be computed for the given class of thread and length of engagement by means of formulas.

Stress Area. A new feature in the 1949 standard is the tabulation of the *stress area*, defined as "the assumed area of an externally threaded part which is used for the purpose of computing the tensile strength." For example, the stress area of a 3/4"-10 UNC screw is listed as 0.3340 sq in. For threads other than those belonging to the "regular" series, the stress areas may be computed by means of a formula based on the diameter midway between the mean pitch diameter and the mean minor diameter of a Class 3 thread.

Credit for Revision. The new American Standard B1.1-1949 was developed by ASA sectional committee B1, on Screw Threads, jointly sponsored by The American Society of Mechanical Engineers and the Society of Automotive Engineers. Officers of committee B1 are: Elmer J. Bryant (Greenfield Tap and Die Corporation), chairman; Frank P. Tisch (Pheoll Manufacturing Company), vice-chairman; W. R. Penman (Bethlehem Steel Company), secretary; and R. L. Riley (Bethlehem Steel Company), assistant secretary. Paul J. DesJardins (Pratt and Whitney Division, Niles-Bement-Pond Company) was chairman, and W. H. Gourlie (Sheffield Corporation) was secretary, of Subcommittee No. 1, on Revision of the American Standard.

In the discussions of the national aspects of the problem, as well as in conferences with British and Canadian experts, ASA committee B1 cooperated closely with the Interdepartmental Screw Thread Committee of which Dr. Edward U. Condon (National Bureau of Standards) is chairman, and Irvin H. Fullmer (National Bureau of Standards) is secretary.

Request Standards for Rayon Fabrics

American Viscose Corporation is making available results of 19 years experience in testing and certifying rayon materials for use in project requested by National Retail Dry Goods Association; Consumer Goods Committee of ASA is studying proposal

THE National Retail Dry Goods Association has asked the American Standards Association for the development of a series of performance standards which will define the minimum quality of rayon fabrics in terms of their intended use. It is impossible to tell from feeling a piece of material whether it will shrink or stretch or by looking at it whether it will fade, and a fabric especially produced for an evening gown will not necessarily be useful in a bathing suit to wear under the hot sun of a Florida beach. Therefore, the proposed new standards will be intended to give both the store buyer and the household purchaser help in selecting rayon materials suited to the use for which they were intended.

American Viscose Gives ASA Crown Tested Plan Data

As a basis for the work, the American Viscose Corporation has made available to the American Standards Association the data collected during its 19 years of experience in testing as well as certifying the quality of rayon materials through its Crown Tested Plan. The corporation's action was taken on request of the NRDGA. The plan has been credited with an important role in the acceptance of rayon by the buying public because of the part it played in raising the quality of rayon fabrics, and in developing weaves and finishes suitable to its properties. It consists of minimum requirements for all types of rayon fabrics covering men's wear, women's wear, and home furnishings. In each of these divisions the minimum requirements are given separately for different end uses, such as sports wear, women's and men's suiting, lining, shorts and pajamas, beach wear, evening gowns, neckties, handkerchiefs, window curtains, drapes, upholstery, and tablecloths. It contains complete outlines of tests for use in the operation of this plan. All of these tests have been approved by various national technical organizations, and include those for water absorption, retention of moisture, bursting strength, color fastness, laundering, perspiration, permanency of finish, resistance to seam slippage, and other similar properties.

The files of technical information and data about the operation of the plan represent years of work and millions of dollars of investment. Without this material, it would take years of time and effort to gather the information necessary to initiate such a program. The corporation has offered to set aside its proprietary rights temporarily with the provision that if no standards for rayon fabrics are established comparable in substance to the minimum requirements set up under the original plan, the ownership of all the information and data shall remain its property.

In announcing its request for the project, the National Retail Dry Goods Association explained that it has long been seeking a method of simplifying the purchase of rayon fabrics. Under the proposed new system of American Standards, department store buyers and buyers of ready-to-wear garments will be able to stipulate in their orders that the products should meet the minimum requirements of the performance standards for the use to which they will be put. The NRDGA expects that the use of long established scientific methods will prove more efficient than rule-of-thumb methods in which appearance and feel of fabric often exert a disproportionate influence in fabric evaluation.

Because of the significance of the proposed program to the retail trade, to the over-the-counter buyer, and to consumers, the National Retail Dry Goods Association has asked the American Standards Association to name it sponsor and to give it responsibility for the work.

How the National Retail Dry Goods Association Operates

THE National Retail Dry Goods Association, which has just brought to the American Standards Association this proposal for one of the most comprehensive projects ever undertaken by the ASA, was organized 30 years ago to provide information and technical service to its retail store members and through them to the buying public.

It was back in 1910 that retailers got together with the idea of forming an association through which they could exchange ideas and work for a better understanding of technical data in the retail field. So well has the organization met the need that now it has a membership of more than 6,000 stores in the department and specialty store field and a staff of more than 80 people with offices in New York, Washington, and San Francisco. Although the membership includes some of the largest merchandising units in the country, 47 percent are stores with less than $500,000 annual volume of business.

The work of the Association is carried on through ten major groups and divisions, which cover every phase of activity of importance to the operation of a retail store. The Merchandising Division, for example, will give member stores advice on how to handle such problems as sales analysis, stock control, merchandise plans and budgets, slow moving merchandise, and merchandise standards. The Sales Promotion Division will show them how to work out advertising budgets, direct mail campaigns, and furnish advice concerning retail

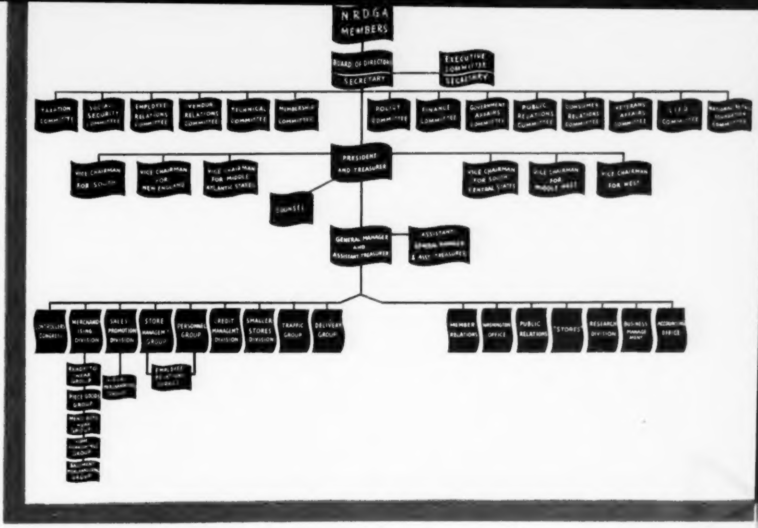
publicity expenses, and retail radio and sales promotion. Operating procedures, wrapping and packing, purchasing and supply standardization, store restaurants, and job analysis and employee relations come under the store management and personnel groups. Other major groups include the Credit Management Division; the Smaller Stores Division where the policies and practices of the other divisions are interpreted and applied in terms of the special problems of the smaller stores; the Controllers' Congress; the Traffic Group; the Ready-to-Wear Group; and the Retail Delivery Group. Each group compiles and issues facts and figures analyzing and evaluating modern trends in retail methods for the benefit of the individuals concerned in each member store. In addition to its books and pamphlets, the NRDGA publishes a monthly magazine, *Stores*, and weekly bulletins which give a Kiplinger-letter type of news service on retail trade developments.

Personnel and Management Exchange Ideas

Personal exchange of ideas between personnel and management in member stores is made possible by the meetings and conventions held in different sections of the country every year by each group and division. In addition, the entire membership has an opportunity to attend the four-day general annual meeting in New York in January. This year the January meeting inaugurated the "Democracy Works Here" campaign which the NRDGA have sponsored jointly with the *Saturday Evening Post*.

Each division operates in the interest of the store groups concerned with the subject under its jurisdiction. Each has its own directors who are elected by the members and control the policies of the division but who are responsible to the over-all Board of Directors.

The members themselves take an active part in the exchange of information and development of the technical-information functions of the Association. Standing committees made up of experts on the subjects to be considered determine policies and represent the Association in carrying out its policies in its relations with other groups. The Technical Committee, under the chairmanship of Charles Doren, J. C. Penney Company, for example, is concerned with such technicalities of production as shrinkage and washability of fabrics in dresses, colors in cosmetics, fastness of dyes, as well



The Organization of the National Retail Dry Goods Association

Members of the NRDGA take an active part in the Association work through standing committees; Divisions and Groups operated by staff give information on how to solve Members' problems.

as the durability of components which go into the merchandise. A Vendors' Relations Committee under the chairmanship of Irwin D. Wolf, vice-president, Kaufmann Department Stores, serves as liaison between the supplier of goods purchased by the store and the retail trade itself. This committee is responsible for maintaining high standards of merchandise quality and for working out methods by which the stores' requirements for serviceability and performance can be met by the supplier groups. Other committees are working on such problems as social security, taxation, government affairs, and consumer and employee relations.

NRDGA Will Make Rayon Standard Available to Buyers

In the case of the proposed performance standards for rayon, the NRDGA will name representatives on the sectional committee to help develop the standards, and the Technical Committee and the Vendors' Relation Committee will undoubtedly coordinate their activities with those of the sectional committee. When the standards are completed they will be called to the attention of the member stores and made available for use by buyers in specifying that rayon fabrics shall meet these minimum performance requirements. Most of the large store units and chains have laboratories where purchases can be checked in accordance with the tests recommended in this proposed standardization program.

The National Retail Dry Goods Association, as part of its service to its members and the public, has taken an active part since 1937 in helping to develop nationally recognized standards. Robert A. Seidel, vice-president and comptroller, W. T. Grant Company, a member of the NRDGA Board of Directors, is the NRDGA member of the ASA Board of Directors and its representative on the Standards Council. Mr Seidel is chairman of the Consumer Goods Committee that heads the program for the development of American Standards in the consumer field. Representatives of the NRDGA have also sat in on the technical work of the sectional committees actually developing standards.

The policies of the National Retail Dry Goods Association are determined by its Board of Directors, elected by the members. Officers are Lew Hahn, president and treasurer; Charles G. Nichols, G. M. McKelvey Company, Youngstown, Ohio, chairman of the Board; George Hansen, Chandler and Company, Boston, chairman of the Executive Committee; Carl N. Schmalz, R. H. Stearns Company, Boston, vice-chairman for New England; Irwin D. Wolf, Kaufmann Department Stores, Pittsburgh, vice-chairman for Mid-Atlantic States; David Ovens, J. B. Ivey and Company, Charlotte, N. C., vice-chairman for South; Gary Y. Vandever, Vandever Dry Goods Company, Incorporated, Tulsa, vice-chairman for South Central States; Ralph T. Friedmann, Ed Schuster and Company, Incorporated, Milwaukee; Ira K. Young, The Crews-Beggs Dry Goods Company, Pueblo, Colorado, vice-chairman for the West.

Because picture quality depends to a large extent upon negative exposure, American Standards exposure index values are directly related to picture-taking practice. The prints on the left above are from improperly exposed film.

Eastman Kodak Company

Use of American Standard exposure meters and indexes will result in uniformly exposed negatives.

Why Your Film Is Rated in "ASA Exposure Indexes"

New American Standard System of rating film speed may form basis for world-wide system; is now used by most film and exposure meter manufacturers

By M. E. Russell

THE amateur photographer seldom realizes in his own camera experience the results of the far-reaching standardization work on photographic materials and equipment, carried on through the American Standards Association. That standard dimensions for film and film holders, camera parts, paper, and projection equipment give him greater satisfaction in the use of his camera is a fact that he knows in general but rarely consciously considers.

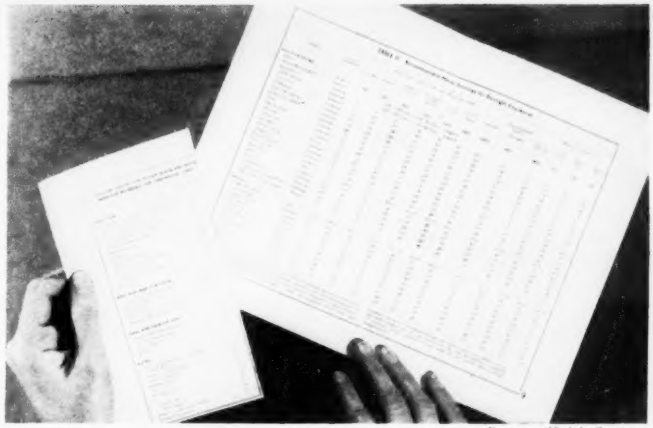
One phase of this standardization program, technical though it is, does touch him closely. Every time he buys a package of film, he profits from this activity through reference in the instruction sheets to the "Exposure Index." The fact that these American Standard ("ASA") numbers are available to photographers is due to the work of Subcommittee 2 of the Sectional Committee on Standardization in the Field of Photography, Z38.

When the sectional committee was organized in 1939, this subcommittee was assigned those subjects relating to the response of photographic materials to light—the field ordinarily designated as photographic sensitometry. At the first meetings of this group it was evident that standards were urgently needed to provide a means for expressing to the public, in a simple yet meaningful manner, the sensitivity of films used for ordinary picture taking—standards that could be used by all branches of the industry, including manufacturers, dealers, consumers, and publishers of technical magazines. It was also apparent that manufacturers of exposure meters and other devices for determining correct exposure must adopt the system, to the exclusion of all others, if the standards were to be of greatest value.

To the group assigned this project the task seemed great indeed, for the problem was by no means new and many attempts to solve it had been made over the years by individuals and organizations concerned with photography. None of these efforts had ever produced an entirely satisfactory system for expressing photographic speed, much less a program correlating other elements as well.

The year 1948, however, saw essentially all of this program completed and the necessary standards well established in American photographic practice. An article has appeared in this journal on each standard as it

Mr Russell, of Eastman Kodak Company, is chairman of subcommittee 2 of the Sectional Committee on Standardization in the Field of Photography, Z38. The Sectional Committee is sponsored by the American Optical Society.



Eastman Kodak Company

Small as it looks in comparison, the ASA table on the left lists exposure data for twice as many films as the table on the right, which was published in Europe.

was issued,[1] but it may be helpful to some readers to summarize the standards that have been required to do the job.

"Speed Standard" — American Standard Method for Determining Photographic Speed and Exposure Index, Z38.2.1-1947

Unlike most previous specifications, this standard describes a means of measuring the sensitivity characteristic of film which is directly related to picture-taking practice. Heretofore, camera users often found that the "practical speed" of a film differed so widely from the laboratory-measured speed that published values based solely on laboratory methods were almost useless. This new system, which has now been used extensively for six or seven years, fills the need for film ratings of high practical significance.

In the standard a new testing method was set up, and many important terms which had come to have a variety of meanings, such as "speed," were carefully defined. The standard also introduced a new concept termed "Exposure Index," which is a value related directly to the exposure normally required for taking a picture. Exposure Indexes, which at first were called "Speed Numbers," appear to be of greater use to most photographers than speeds, which represent a more basic concept. The related exposure meter standard requires that Exposure Indexes be used for the "film settings" on exposure meters.

"Density Standard" — American Standard for Diffuse Transmission Density, Z38.2.5-1946

Determining the response of a film to exposure and development involves measuring the blackness, or optical density, of the silver deposit formed. No fully standardized methods of measuring the density of such deposits have been available previously, and it was only after intensive research that it was possible to prepare a standard useful to the industry. This standard supplements the speed standard by clarifying the meaning of "diffuse transmission density," a concept used in the design of instruments needed for determining speed and exposure index. The standard also provides a pattern for defining other types of density, such as specular and nonvisual.

"Exposure Meter Standard"— American Standard for General-Purpose Photography Exposure Meters (Photoelectric Type), Z38.2.6-1948

The adoption of a standard for photographic exposure meters was a major step in setting up a practical speed system. This standard was based on a group of standards drawn up during the war at the request of the armed forces. Almost every exposure meter manufacturer in the United States cooperated in developing the new standard, indicating that American manufacturers recognize its worth and will make full use of it. The performance of exposure meters is specified to such an extent that all conforming meters call for substantially the same exposure for a particular scene at a given Exposure Index.

"Exposure Computer" — American Emergency Standard Photographic Exposure Computer, Z38.2.2-1942.

During the war the armed services requested a simple photographic exposure computer for use in the field; accordingly a standard was prepared containing the best available information to aid photographers in estimating proper exposure under a variety of light conditions and for any part of the earth's surface. The standard was issued in the form of a pocket notebook and was much used by civilian as well as by military personnel. A peacetime version of the computer is now in the final stages of adoption. Of course Exposure Indexes are used for the "film setting" scale of the guide calculator.

In addition to being of aid to manufacturers of certain types of exposure-guide devices, the standard contains valuable data on light intensities, information which had never previously been assembled for the benefit of photographers. Solar data furnished by the Smithsonian Institute were modified to provide tables of light values to fit the specific needs of photography. The tables indicate the amount of light useful for taking pictures at all points on the earth's surface at all times, except for local disturbances of weather.

In addition to those standards related closely to the speed problem, the subcommittee has issued several important standards concerned with the measurement of other sensitometric properties. Included in this group are specifications for determining and expressing types of color sensitivity and for the sensitometry of photographic papers.

To what extent have the speed and exposure standards been used? Most of them have been functioning long enough so that their worth can be accurately assessed. It is not an ex-

[1] New Standards to Simplify Sensitometric Work on Films, by M. E. Russell, Industrial Standardization, June 1946, vol 17, p 133; New Transmission Density Standard Basis for Photography Measurements, by C. N. Nelson and M. H. Sweet, *ibid*, p 138; Army and Navy will Use New Standard Computer for Picture Exposures, by M. E. Russell, *ibid*, June 1942, vol 13, p 171; For Better Photography, by Allen Stimson, *ibid*, October 1948, vol. 19, p. 135.

aggeration to say that they have been very generally adopted by the American photographic industry. Only a few years ago film sensitivity was expressed in this country by a variety systems: H & D. Inertia, DIN, Sheiner, Weston, General Electric, Kodak, and others. Today the American Standard Exposure Index is the accepted value.

Until recently manufacturers calibrated their exposure meters to work with their own system of speed measurement, whereas now the newer models of meters operate with American Standard values. This may be contrasted with the situation in Europe, where no one standard system of speed evaluation or meter calibration has been thoroughly established. In the photo the larger table shows the extent to which one film manufacturer had to go to help his European customers correctly expose a few of his products; the smaller table shows how simple it has become in this country. The larger table gives information for only 15 films; the smaller one for 28 films.

The progress of the Exposure Index program in this country has been noted with interest by other countries. The British Standards Institution has a photographic project similar to ASA project Z38, and the two groups are making every effort to produce standards of international value. It is very gratifying to report that the recent British Standard on speed, BS-1380, is in substance the same as the American Standard Z38.2.1-1947. Minor changes were made in the latest edition of the American Standard so that the photographic speed standards of the two countries would be essentially alike.

Canada has a liaison member on the ASA committee; hence there should be agreement between American and Canadian standards. France, Germany, and several other countries are re-examining their standards and are showing considerable interest in the work of the American and British committees. The ASA is striving to cooperate with all countries to establish a world-wide system.

Canada Progresses in Standards Work

CSA more than doubles membership in 12 years; broadens scope of program

The Canadian Standards Association, which held its 24th Ordinary General Meeting in Toronto recently, has grown to considerable proportions since its inception in 1937. From a membership of approximately 600 then, it has reached the impressive roster of about 1400.

The Association consists of three divisions: the Standards Division, Electrical Approvals Division, and the Canadian Welding Bureau.

The Standards Division has broadened its scope to include a number of new sections, such as Non-Ferrous Metallurgy, Photography, and Packaging, and is developing several additional sections of industrial production in standardization.

The activities of the Electrical Approvals Division and the Canadian Welding Bureau represent services to Canadian industry and to the Canadian public that are said to be unique in the history of standardization.

The CSA is a member of the International Organization for Standardization and the International Electrotechnical Commission.

A large number of new specifications and codes of practice were reviewed at the meeting, as well as many projects under development and new projects scheduled to get underway this year. The work of the Association also includes reviewing existing standards that were issued more than five years ago, and bringing them up to date.

Two new Canadian standards already published are: Tolerable Limits and Special Methods of Measurement of Radio Interference from Trolley Buses, Tramways and Electric Railways, C22.4, no. 102-1948; and Tolerable Limits and Special Methods of Measurement of Radio Interference from High Voltage Lines and Apparatus, C22.4, no. 103-1948.

Other general requirements, definitions, and procedures relative to control of radio interference scheduled for standardization under the Canadian Electrical Code deal with vehicles using internal combustion engines; electrical apparatus; radio frequency generators—industrial, scientific and medical; communication and signal systems; private and commercial receivers, transmitters and R.F. transmitter lines; and antennae and towers.

Other standards will be forthcoming on interference measurement instruments and methods of measurement; specifications for suppression units; use of electrical equipment in metalliferous mines, non-metallic mines and quarries, and underground coal mines.

The committee on the Canadian Electrical Code is also drafting rules for outdoor high tension substations on private property, intending to coordinate the practices of utilities and private property. Another project is the drafting of rules recommending a dust-tight room for housing electrical equipment so that it will not be exposed to hazards from explosive air and dust mixtures.

Standards relating to asphalt floor tile; pressure preservative treatment for cross ties; specifications on lime and gypsum products; loose wood fibre insulation; drawing office practice for interchangeable manufacture; cast iron radiator sizes; threads for new pipe; specifications on rural type transformers; joint use of poles (electric); and heights of electric wire above ground are also under development or scheduled for later this year.

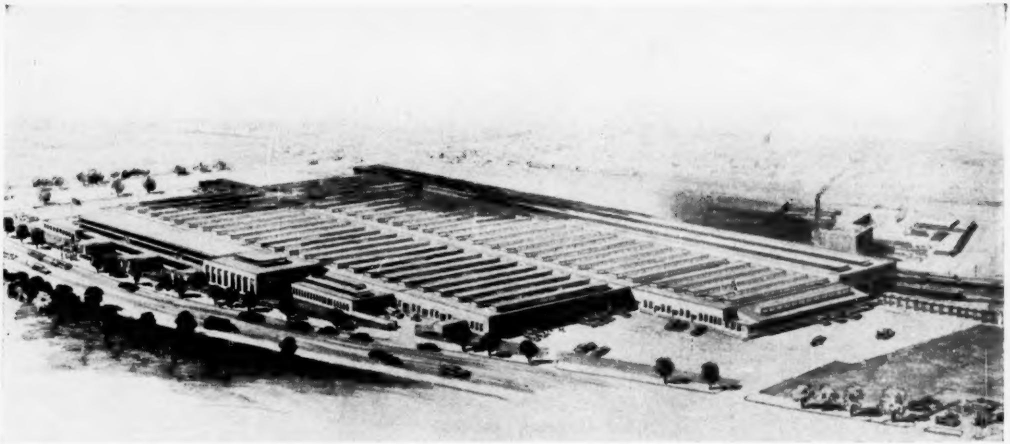
Projects pertaining to low alloy high tensile steel; method of determining weight and uniformity of coating on zinc-coated (galvanized) iron or steel articles; welding of oil storage tanks; and specifications for resistance welding are also on the docket.

A standard for 16 mm projectors for industrial and educational use, in conjunction with committee Z22 of the American Standards Association, is in progress. Cueing devices for motion picture printer light change mechanisms are also being developed.

In the packaging field, work is underway on score allowance; carton sizes for breweries, spirits, wines, jams and jellies, and canned goods; and allowance partitions.

The Canadian Welding Bureau, which is exerting increasing influence on the trade, is offering a correspondence course to train supervisors, draftsmen, and design engineers. Many firms will only approve work done by a Bureau member.

Officers for April 1, 1949, to March 30, 1950, were elected as follows: chairman, J. G. Morrow; vice chairmen, N. P. Petersen and R. E. Jamieson; and honorable secretary, R. H. Mather.



Alfred Hopkins and Associates

Construction of the Postal Concentration Center, Long Island City, N. Y., was greatly speeded by use of modular coordination. Designing this 15½-acre building took only 29 days and construction only 72 working days.

WHAT PRICE Modular Coordination?

With the termination of the Modular Service Association, another source of technical service is needed for continuing work on modular coordination—a tool of real value for architects, engineers, the building industries, and manufacturers of construction materials

THROUGH the centuries scientists, architects, and mathematicians played with the thought of using a unit of measure, a "module,"[1] to achieve certain specific aims or to bring about certain results. Some believed a "module" was the golden key to beauty in design and form; others thought of it as the solution for complex arithmetical problems. The ancient Greeks used it in principle, if not in name. Through its application they achieved beauty; today we attempt to achieve efficiency and economy.

Perhaps a wide stretch of the imagination is required to connect the module of olden Greece with the dimensional coordination work of today, but the fact remains that they are basically alike in principle.

Today in the United States the standard basis for modular coordination is a three-dimensional grid, uniformly spaced on a 4-in. module. Efficiency and economy in building construction without loss of flexibility and originality in design are the chief aims or objectives of its use. When modular coordination is effectively carried out, using the 4-in. module as the unit of measure in designing a building—and with doors, windows, bricks, lumber, and other material and equipment designed and made in terms of the same unit—the elements that go into a building are ordered from stock to meet the requirements of the design, and cutting and fitting at the site are eliminated.

The savings in time and money for every group concerned with building can hardly be estimated. The manufacturer of building materials and equipment is enabled to eliminate many odd sizes, to simplify manufacturing processes, and to lower inventories. The architect finds much of his complex labor reduced but with no reduction in his freedom of design. The contractor gains through simpler plans and less labor. The owner benefits through lower building costs. It has been stated that costs could undoubtedly be cut 25 percent if no materials were used in a building except those designed and built according to the modular coordination principle and if the build-

[1] In architecture a "module" is the size of some one part, such as the diameter or semidiameter of a column, used as a unit of measure for regulating the proportions of the other parts of a structure.

From the minutes of the January 6th meeting of the Executive Committee of ASA Project A62

Whereas:

In the development, acceptance, and adoption of the principles of Modular Coordination, as applied to the dimensions of building products and equipment, the work initiated by the late Albert Farwell Bemis has been implemented and is now generally recognized as a technological development of major significance to the construction industry and the building public, and;

Whereas:

The gratifying progress in this development, acceptance, and adoption of the principles of Modular Coordination, during the past decade, would not have been possible in the absence of the secretarial and technical services rendered ASA Committee A62 by Modular Service Association, through the interest and generosity of the family of the late Albert Farwell Bemis, be it therefore;

Resolved:

That the members of the Executive Committee of ASA Committee A62, on behalf of the Committee as a whole, express their appreciation and thanks to the members of the family of the late Albert Farwell Bemis for this most effective assistance, and to M. W. Adams, Executive Secretary of Modular Service Association, for his untiring efforts and unfailing interest in the work and welfare of ASA Project A62, during his efficient service as Secretary of Sectional Committee A62.

ing plans were also designed and drawn on the modular system.

Recognizing how important the modular coordination system can be in any attempt to reduce the cost of housing and speed the building program, the Small Homes Council made use of modular products and modular designs as the first step in its experiments to develop more efficient methods of building. The results of its experiments have been given wide publicity recently in popular national magazines.

Possible Future Development Of Modular Coordination

But despite this emphasis on its use for less expensive small homes, and despite its highly successful application to such large building developments as the Bellevue Hospital Nurses Home in New York, the administration building at the University of California at Los Angeles, several hospitals built by the Veterans Administration, and Army base theaters, the future of modular coordination looks far from promising. The history of ASA Project A62 throws light on its present status and its possible future development.

Examples of limited coordination have long been familiar, and many other countries besides the United States have given consideration to the economy, as well as the other advantages, to be derived from standard sizes. Notable among these are France, Sweden, Belgium, and Denmark.

Outstanding in the United States was the pioneering research of the late Albert Farwell Bemis, who devoted extensive personal resources to the problem of improving housing for lower income families. The later part of Mr Bemis' life was largely devoted to research in developing and proving a basis for the dimensional coordination of building products.

After the death of Mr Bemis in 1936, his heirs wished to make the results of his research available. To this end they proposed to the American Standards Association that a project be organized for the coordination of sizes of building products. The ASA replied that such a project had previously been proposed and rejected because the objectives were too difficult for accomplishment by the voluntary committee method without the aid of a full-time technical staff. It was foreseen that the committees, made up of members representing architects, builders, and producers of building materials and equipment, would not be sufficiently familiar with the modular system to translate their ideas into actual coordinated dimensions that would fit into a general coordination plan.

Modular Measurements Include Mortar and Setbacks

In modular coordination, for example, an 8-inch brick is not exactly 8 inches. The technical job of coordination is complicated by the fact that modular designs have to take into account the mortar between the bricks or the setbacks of masonry jambs to provide space for ventilator operation. One type of brick under this plan is $7\frac{1}{2}$ inches long. When a half-inch mortar joint is added, the combination measures 8 inches, and 6 bricks drop neatly into a 4-foot section of wall. Walls, then, have to be designed in the same multiples, as do openings, frames, and other fittings.

Because of this technical problem, the heirs of Mr Bemis organized the Modular Service Association to provide the help required by ASA. They allocated to its support certain funds available under Mr Bemis' will.

With this assurance of help from Modular Service Association, the ASA called a conference of representatives of the building industry to consider the advisability of the proposed project. This conference, held in 1938, unanimously recommended that the work be authorized. This was done and "ASA Project A62 for the Coordination of Dimensions of Building Materials and Equipment," was organized, with the American Institute of Architects and the Producers' Council, Inc as joint sponsors.

The organization meeting of Sectional Committee A62 was held on July 13, 1939, and the responsibility for conducting its business was delegated to a smaller Executive Committee. This committee proceeded to lay out a program of work, including the formation of study committees for various classes of building products. Eighteen study committees are now at work.

Through this committee's activities, American Standards that pro-

vide the basis for the coordination of dimensions of building materials and equipment, the basis for the coordination of masonry, sizes of clay and concrete masonry units, and sizes of clay flue linings have been formulated and published.

Building Industries Apply Modular Principles

At the same time, the building industries have made use of the work and have applied the modular principle to their products. While the masonry standards were being developed, the window industries arrived at sizes for most of their common products to fit with the modular masonry openings. Wood double-hung windows were coordinated. A complete change of sizes was made by the solid-section steel window manufacturers. As a result, the modular sizes for 12 different types of steel windows are now produced exclusively as stock items and fit into the modular masonry openings formed by standard modular masonry units. It is estimated that standardization on modular sizes of steel windows has reduced the variety of types and sizes from 3,500 to 300, and still permits many different types of modular windows to fit interchangeably in modular masonry openings.

The natural stone and cast stone industries cooperated in this work and developed two types of modular sills, one for the double-hung windows and the other for solid-section steel windows.

Masonry Units Become Available

By January 1947 a considerable variety of modular products was available on an industry-wide basis and modular coordination was sufficiently developed to afford immediate substantial economies. By this time modular masonry units (bricks, cinder blocks, concrete blocks, facing tile, and terra cotta structural blocks) were almost universally available and some companies had converted entirely to modular products. A vast amount of technical work had either been started or was being arranged for other building products to extend these advantages. This technical work, which experience showed was essential for a successful modular coordination program, constituted:

Technical assistance to study committees

This included making the drawings needed to translate the committee's recommendations in terms of the 4-in. modular unit on the standard grid.

Technical assistance in exchange of studies and in cooperation between study committees

It is necessary to coordinate the work of one study committee (aluminum windows, for example) with that of another study committee (masonry units, for example) so that the modular windows and masonry units will fit together.

Technical assistance to manufacturers of proprietary products

Since only a few engineers are trained in the practical use of the modular system, they are continually being called upon to show manufacturers of building materials and equipment how to apply the modular system to their products.

Technical assistance to architects, engineers, and builders

Similar help is needed by these groups in applying the modular system to the design and construction of buildings.

Certification of modular details

Modular details which explain the use of proposed American Standard coordinated sizes, or other modular details submitted to Sectional Committee A62, must be reviewed. These may be approved as "Standard Coordinated Details."

By the end of 1946, the funds from noncommercial sources which had made possible the secretarial and technical services for Project A62 were nearing exhaustion. The Producers' Council, Inc applied to the Office of Technical Services, Department of Commerce, for a research contract to continue the work for a limited period so that industry would have time to organize the necessary support.

Accordingly, the government entered into a contract with the Modular Service Association to carry along the work of dimensional coordination for a period of approximately 12 months. A total of $65,900 was made available. This contract expired before midyear 1948 and the financing problem was again in the hands of industry.

During the eight years since the A62 project was initiated, the American Standards Association has done everything possible to forward the work. Many hours of staff time and secretarial services have been devoted to the project. During this eight-year period the expenditures of ASA directly chargeable to this project have been several times the amount that the building industry has contributed to ASA that might be fairly allocated to the work. The ASA believes that the project is of such importance and looms so large in the picture for reducing building costs, that every effort should be made now to go forward with the work.

Modular Service Association has now discontinued its existence as a going organization. Although the American Standards Association has agreed to furnish ordinary secretarial service, and the Housing and Home Finance Agency has agreed to cooperate in every way possible, technical services to the study committees have had to be discontinued.

According to the latest statistics available, there are several hundred manufacturers and producers who have converted their plants to produce modular products. Architects and engineers throughout the country are planning their buildings for the use of modular materials. Every day another architect inquires for information so that he may start from the beginning to plan his buildings according to the system of dimensional coordination.

Modular Coordination Reduces Building Costs

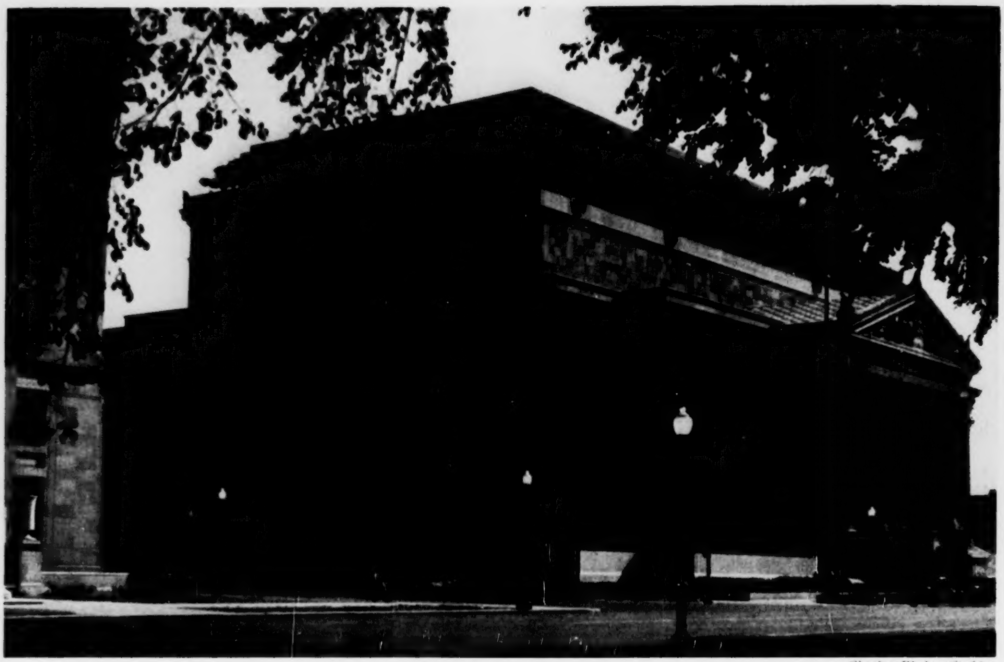
It is agreed by many of those who are in a position to know that modular coordination can do more than any other single movement or effort to reduce the cost of building today —housing in particular.

What is known as the building industry in the United States has so many ramifications and trade organizations that it is impossible to weld it into a close-knit group such as exists in many other industries. For this reason, coordination of dimensions, depending so largely on highly technical data and experience, cannot succeed without intensive effort and active interest on the part of all groups concerned.

Study Committees for Project A62

Eighteen study committees are developing modular standards for various building products through ASA Project A62:

1. Masonry Made of Structural Clay Products
2. Wood Doors and Windows
3. Masonry Made of Concrete
4. Metal Windows
5. Natural Stones, including Granite, Limestone, and Marble
6. Structural Wood
7. Building Layout
8. Structural Steel
9. Miscellaneous Metal Products (excluding doors and windows)
10. Masonry Partitions
11. Cast-in-Place Concrete
12. Window Accessories
13. Glass Block
14. Metal Doors
15. Cast Stone
16. Kitchen Equipment
17. Toilet Partitions and Shower Stalls
18. Steel Lockers (in process of organization)



Charles Phelps Cushing

Indiana Limestone is used in exteriors of U. S. Archives Building in Washington . . .

Recently approved standard

To Simplify Use of

FOR more than 100 years, Indiana Limestone has been used in architecturally prominent buildings. Whether it be Grand Central Terminal in New York or Union Station in Chicago; Mellon Institute for Industrial Research in Pittsburgh; Princeton University at Princeton, New Jersey; St Albans Cathedral in Washington, D. C.; Rockefeller Center and the Empire State Building in New York; or those buildings in Washington that house the U. S. Archives, the Postal Department, or the Departments of Labor, Commerce, or Justice, Indiana Limestone has been used largely in its exterior construction.

Yet despite the great demand, there has never been a complete and comprehensive specification available for the selection and installation of Indiana Limestone—never, that is, until the recent approval of the American Standard Specifications for Indiana Limestone, A93.1-1948.

Indiana Oolitic Limestone is found in commercial quantities only in the southern part of Indiana, principally in Lawrence, Monroe, and Owen counties. The massive deposits of this noncrystalline, fine, even-textured limestone constitute one of the most extensive stone deposits in the world. Possessing a high internal elasticity, it adapts itself without damage to extreme temperature changes required in modern building.

The standard itself is for Indiana Oolitic Limestone used as cut stone and as ashlar. For convenience, the two are classified separately. The standard is so formulated that it may be incorporated in a general specification with notes calling attention to exceptions that may be necessary to apply to a particular building or structure. By simple reference to American Standard A93.1-1948, any architect or engineer may specify the complete furnishing and installation of Indiana Limestone in his building. Such details as the varieties and finishes of stone, cutting and fitting, carvings, shop drawings, models, inscriptions, cornerstones, loading and shipping, delivery and storage, damaged stone, cleaning, and protection of the finished work are automatically covered without having to write them out. This not only saves time and space but also assures accuracy by eliminating vagueness and uncertainty.

These specifications were originally prepared by the Specifications Committee of the Indiana Limestone Institute, composed of quarriers and manufacturers, with the assistance of architects and engineers. The results of their work received unanimous

. . . in world-famous Rockefeller Center . . .

Charles Phelps Cushing

. . . and in New York's Grand Central Terminal

gives comprehensive data

Indiana Limestone

approval from the Institute and for many years had nation-wide distribution and acceptance.

ILI Research Shows Need

During this period, however, the ILI did a great amount of research and investigation with the result that a need was felt for an American Standard. With this in mind, the Institute submitted to the American Standards Association in December 1947, a draft of a standard specification for Indiana Limestone which seemed acceptable to all members of the ILI.

The draft was circulated to all interested groups in the country for their comments, suggestions, and recommendations regarding approval as an American Standard. The survey resulted in useful comments or complete approval from the American Institute of Architects; the American Society for Testing Materials; the American Society of Civil Engineers; the Associated General Contractors of America, Inc; the Association of American Railroads; the Federal Works Agency, Public Buildings Administration; the Fire Protection Group; the National Housing Agency; the Telephone Group; the U. S. Department of Commerce, National Bureau of Standards; the U. S. Department of Commerce, Construction Division; and the Veterans Administration.

Most of the suggested changes were accepted by the Indiana Limestone Institute, with the exception of those that reflected only local conditions and could not be extended for national use.

Realizing its value as an American Standard, the Institute now plans to make the standard available to all architects, engineers, and builders interested in the use of Indiana Limestone.

The American Standard Specifications for Indiana Limestone is the second of the American Standards in the building field which aim to serve architects and engineers in specifying by reference the use of a particular material. The American Standard Specifications for Interior Marble, A94.1-1948, is already in use, and the sectional committee is now working on a granite specification.

Copies of the American Standard Specifications for Indiana Limestone, A93.1-1948, should be available by the end of April.

A New Approach

to Electrical Indicating Instrument Standards

The new specification is an improved tool for manufacturers and users of stationary panel and switchboard instruments.

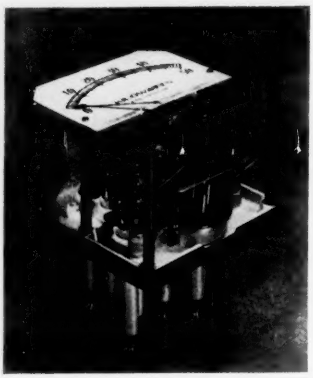
By John H. Miller

THE new American Standard on Electrical Indicating Instruments, C39.1-1949, which has just come off the press, represents a somewhat new approach to the problem of electrical instrument standardization as applied to panel and switchboard instruments.

The standard of 1938 was largely the work of the pioneer instrument designers of several decades ago and the approach was largely that of standardizing terminology and stating definitions. The design of instruments of those days was somewhat individualistic and about the only common denominator was the standardization of the quantities measured.

The Navy standard then existing, 17-I-12, was more of a specification for instruments for the Navy Department and as such seemed to contain a great deal of material which instrument manufacturers found useful in new designs since the dimensional and operational requirements were specifically stated and served as a goal of sorts. To be sure, the Navy specification involved only Navy purchasing but Navy business was always desirable and in laying out a new instrument or line of instruments those dimensions were largely followed. The operational requirements of the Navy specification seemed to be acceptable commercially in most instances and, by and large, were adhered to in most commercial designs.

During World War II, with the advent of electronic equipment, radar, radio communications, and the many other facets of the electrical art of war, it became perfectly obvious that a truly vast number of instruments would be required. At early meetings of the instrument industry it seemed impossible to envision a production in terms of the quantities mentioned. In any event, it did seem quite obvious that with such an enormous requirement the matter of standardization should be explored to the end that the instruments of one manufacturer could be substituted for those of another manufacturer where required to meet the production needs of the services for the end equipment. Early meetings were held at Fort Monmouth and shortly thereafter, pursuant to arrangements made between the American Standards Association and the War Department, the task of producing a war standard for panel instruments became one of the many projects so handled.



Weston Electrical Instrument Corp.

Interior view of a polyphase wattmeter of the six-inch rectangular type.

A committee was organized to handle this war standard with representatives from the several branches of the armed services and engineers representing the manufacturers. The meetings were held in New York and in Washington in rather rapid succession to the end that the standard was pressed to a reasonable conclusion much more rapidly than would normally be the case.

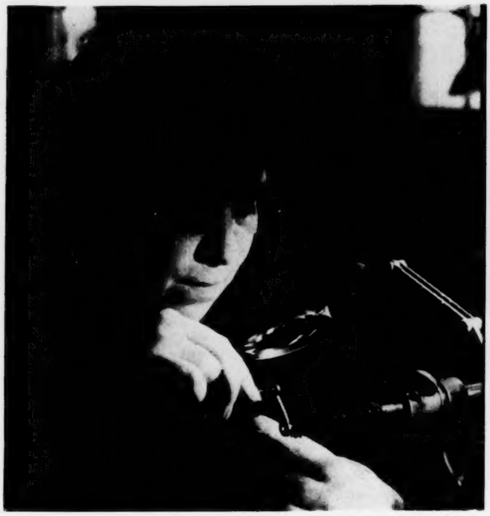
A few high spots from this work may be of interest. Early in the proceedings it was pointed out that both metal and plastic cased instruments were available and used by the services, but in view of the fact that metals appeared to be more strategic than plastics, and that plastic cases were required in many instances for insulation, and in the further interest of simplification, it was decided to concentrate on plastic cased panel instruments only. The armed services were most desirous of applying a coding to the instruments whereby they could be described briefly by that coding in keeping instrument stocks in various depots and which would further simplify ordering. The coding was applied to all of the instruments covered. The standard, C39.2, came out in 1943 and formed not only a standard and a specification, but also a catalog of standard ranges with their codings whereby the number of special instruments frequently ordered, because of a prior lack of standard listings, was materially reduced.

Wartime Standard Served Well

It is believed that everyone concerned felt that standard served its purpose well and undoubtedly served to raise the quality of instruments obtainable in an open market through the establishment of test limits and the requirement that qualification approval must precede quantity procurement.

At the end of the war the question was raised as to whether or not the wartime standard should be taken over directly as an American Stand-

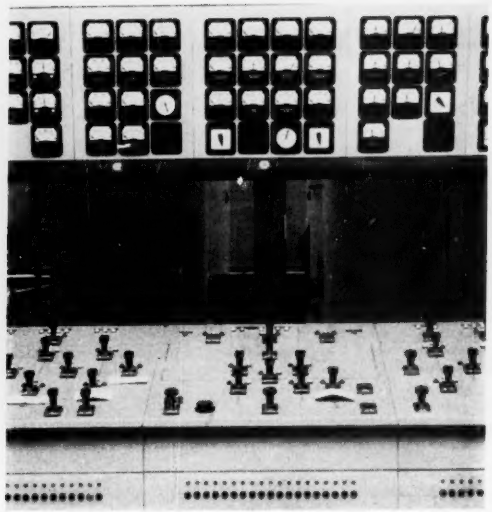
Mr Miller is vice president and chief engineer at Weston Electrical Instrument Corporation, Newark 5, New Jersey.



Weston Electrical Instrument Corp.

The Manufacture . . .

This operator is winding moving coils for d-c instruments.



Public Service Electric and Gas Co. of N. J.

. . . And the Installation

Main control board at the new station in Sewaren, N. J.

ard. A general committee meeting was held on this subject in May 1946. After some discussion, it seemed obvious that the wartime standard with its very specific listing and requirement for coding numbers on the instrument dials was a bit limiting in a straightforward commercial era. It was believed, however, though the 1938 standard was probably out-moded, that there were a number of good things worked into the war standard which in some manner should be retained for the industry and for the users of the instruments. But, rather than be confined to a mere modification of the war standard, it was deemed better to obsolete the war standard completely and start afresh.

A new working committee was appointed by E. S. Lee, chairman of the Sectional Committee on Electrical Measuring Instruments. The committee personnel was very largely that of the committee which produced the wartime standard. The first meeting of the committee was called for September 1946 and the preliminary discussions revolved around the method of attack on the broad problem. It was generally agreed that much of the body of the wartime specification was satisfactory and useful, and in the ensuing monthly meetings all the items contained in the main body were reviewed, and in many cases restated. The main change in the specification, however, was the placing on individual sheets the pertinent detailed requirements against each size and kind of instrument. The philosophy behind this proposal was simply that one is generally interested in a certain size and kind of instrument on a given occasion and the checking through many pages for the details applying to that particular item had been found a most time-consuming operation on all prior specifications. Work therefore proceeded along these lines and the very first data sheets embodying these requirements were found most useful in coordinating the thinking of the committee.

Committee Postpones Portable Instrument Standard

A large amount of material had been put in shape by May 1947 and at that time Mr Lee called a meeting of the sectional committee at which a report of the subcommittee was made. Drafts of the work to date had been distributed. The main committee seemed well satisfied with the work accomplished so far and empowered the subcommittee to proceed along the lines envisioned to the end that a usable document be made available as rapidly as possible.

During the winter months of 1947-1948 work progressed and it became apparent that while the panel and switchboard instruments were fairly well covered, a considerable task lay ahead in attempting to cover portable instruments in any detail whatever. It was, therefore, proposed that the standard be brought to an interim completion on panel and switchboard instruments, with the portable instruments following as an additional or supplementary document at some future time. A meeting of the main committee in May 1948 authorized such a procedure and the 16th draft of the document, covering panel and switchboard instruments, was put in shape for ballot.

The document was approved with very minor editorial changes and seems to be good evidence that a committee representing a cross-section of industry and the armed services, with others representing the consuming public, can produce a factual document by dint of discussion and compromise though never compromising with well established fundamental criteria of performance.

It is believed that the standard as issued, Part 1, C39.1-1949, will be a most useful tool for all concerned with both the manufacture and the use of panel and switchboard instruments. Basic definitions have been improved, definitions have been added, and to some degree the committee has attempted to establish definitions on items which have apparently never been subject to rig-

orous defining in the past. Much new ground has been covered in these new definitions and while they probably will see modification in coming years as the art progresses, at least it is believed that they will have served as a nucleus on which to build the more refined definitions of future years.

As a case in point, the term "sensitivity" has been completely omitted from this standard because the term is reciprocal in that an instrument with a high sensitivity takes a low amount of energy for a given indication and a great deal of confusion has existed in the past in using the term "sensitivity." After much deliberation the committee chose the simple word "loss" as descriptive of the energy taken to operate the instrument and with special definitions to cover the requirements. For example, a voltmeter has a "current loss," whereas, a current measuring instrument has a "voltage loss." Adding "voltampere loss" and "power loss" in watts, the story becomes complete with no reciprocal functions involved. Shortly after these were evolved the committee in its ordinary conversation began to use these terms and it is believed they will be found well worthwhile and will find wide use in discussions having to do with what we used to call "instrument sensitivity."

In a similar manner, the problem of instrument accuracy where nonlinear scales were used has always presented an anomaly in that one never knew how far to go in applying the basic accuracy to those parts of the scale which are cramped or condensed. With newer instruments having scales condensed at the top as well as at the bottom to secure certain characteristics, the question came up time and again as to how the accuracy should be evaluated. A statement was finally evolved which, while perhaps a bit awkward in phrasing, seems to cover the matter. It is stated in Note 3 in Section 3.21, Accuracy Rating, Page 7.

Evaluating Instrument Accuracy

"In the case of instruments having nonlinear scales, the stated accuracy only applies in those portions of the scale where the divisions are equal to or greater than two-thirds the width they would be if the scale were evenly divided. In other portions of the scale, the allowable limit of error will be a distance equal to two-thirds the total scale length multiplied by the rated accuracy."

The committee believes that while the phraseology may be improved in years to come, the fundamental concept is sound and the statement in the note will resolve many of the questions which have heretofore been raised in this regard.

The sheets of detailed requirements are pointed out as most important in this standard. They place on one sheet the pertinent data applying to a specific size and kind of instrument so that, once an individual is familiar with the basic definitions, and these are, incidentally, indexed on the detailed requirement sheets, one can get a mental picture of the pertinent operating characteristics rapidly and with little effort. The committee gave some consideration to separating these sheets and making them available in loose leaf form and while the suggestion is on record, and may be deemed proper in years to come, it was decided that at this time the document would be published as one pamphlet.

As with any specification, time alone can evaluate the relative importance of the various sections as well as the correctness of some of the concepts. The committee realized in accomplishing this work that a standard is a live and growing thing and not a static affair. The standard is, therefore, presented not as the last word in any sense but rather as something on which to further build as the art progresses.

Foundry Equipment Group Joins ASA as Member Body

Newest member of the American Standards Association is the Foundry Equipment Manufacturers Association, of which William L. Dean, Mathews Conveyor Company, is president.

FEMA is different from most trade organizations in that it is founded on a common customer, rather than a common product. Its functions are: to promote greater and more friendly relations among its members; to foster better trade practices among them; to assist them, individually and collectively, in conveying to the public and to governmental agencies a better understanding of the basic importance of the foundry industry; and to encourage research on the part of members with respect to new and improved equipment and development with respect to new processes and methods of foundry operation.

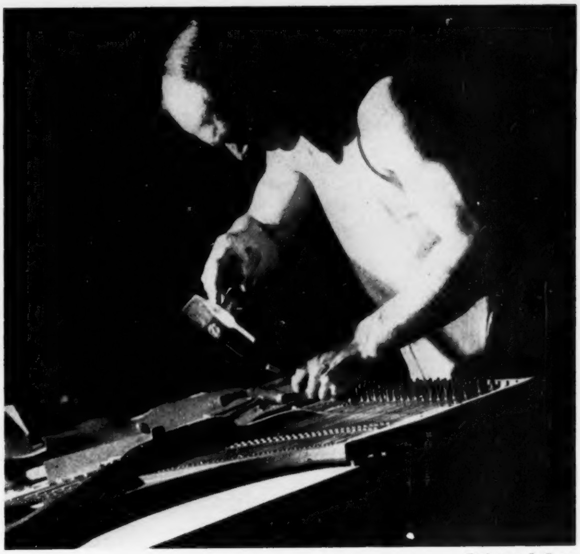
William L. Dean
President, Foundry Equipment Manufacturers Association

Its services include dissemination of reports of progress in the field for the benefit of the manufacturers' customers, and their customers' customers; compilation and issuance of current basic trade information; and cooperation with other business associations and organizations in all things that will improve and strengthen the industry and stabilize the business interests of the United States.

The membership is composed of 63 manufacturers, who represent approximately 80 percent of the foundry industry's source of basic equipment.

FEMA is at present represented on ASA project Z9, Safety Code for Exhaust Systems.

Will the American Standard musical pitch of 440 cycles per second, approved by composers, musicians, and instrument makers, and used also by Great Britain and France, become the International Standard pitch? Or will the 435 cps "standard" for the note A, adopted in Vienna in the last century, again be adhered to?



Steinway & Sons

Technician stringing a piano pitches A at 440 cps.

What's the Pitch, Boys?

ON the point of being harmonized at last—musically, that is—the world has been asked to forsake the current pitch and hit an old A-note. The Austrian delegation to the United Nations Educational, Scientific and Cultural Organization suggests a meeting to encourage international use of one pitch, and at the same time the International Organization for Standardization, which has consultative status with the Economic and Social Council of the UN, has a project underway to bring to a crescendo the work which was started before the war on another international standard pitch.

Pitch, according to the musicians, depends upon the number of vibrations of sound per second which result in the acuteness or gravity—the degree of highness or lowness—of a given note. The Proposed American Standard Acoustical Terminology states that it is "that attribute of auditory sensation in terms of which sounds may be ordered on a scale extending from low to high, such as a musical scale.

"Pitch depends primarily upon the frequency of the sound stimulus," it goes on to say, "but it also depends upon the sound pressure and wave form of the stimulus. The pitch of a sound may be described by the frequency of that simple tone having a specified sound pressure or loudness level, which seems to the average normal ear to produce the same pitch. . . ."

The present standard for the United States, Great Britain, and France is based on a frequency of 440 cycles per second for the note A in the treble clef (philharmonic pitch). The A-440 pitch had also reached the last steps toward becoming the international standard before the second World War intervened. However, Dr Hermann Zeissl, head of the Austrian delegation to UNESCO, has urged that an international conference be held to encourage adherence to the "standard" French diapason normal pitch of 435 cps, which was adopted by the International Congress back in 1885.

Dr Zeissl is correct about the lack of adherence to the Vienna standard. According to Olin Downes, music authority and critic for the New York Times, the change originated with the instrumentalists and instrument makers. The extensive development of wind instruments during the romantic period in music led manufacturers to raise the pitch for greater brilliancy and carrying power. The acoustics of the vast modern concert halls also undoubtedly had something to do with it. Now the A-440 pitch is not only accepted but insisted upon by our leading piano manufacturers as well as nearly all of our symphony orchestras.

A-440 Associated With Temperature of 72F

Also, the proposed American standard states that musical instruments are to be capable of complying with the A-440 standard when played where the ambient temperature is 22C (72F), while the A-435 standard is associated with 15C (59F). The latter was dictated, no doubt, by the drafty European concert halls of the 19th century. The effect of temperature on pitch varies, of course, according to each particular instrument.

In 1934 the International Consultative Committee on Telephony initiated consideration of standardization work in the field of acoustics. At first it appeared that the work would be carried forward by a new international organization under the auspices of the International Electrotechnical Commission. Most of it, however, was later assumed by the

International Federation of National Standardizing Associations, as ISA project 43, with the IEC retaining a committee on electro-acoustics (IEC project 29).

Two international meetings were held on the ISA project, which was under the Secretariat of Germany. At the first of these, held in London in 1937, it was recognized that the Vienna pitch had been violated widely, and variously pegged up. It was agreed that an international pitch was essential, and the delegates—from Germany, Belgium, France, Great Britain, The Netherlands, Italy, Portugal, Czechoslovakia, and the United States—agreed to send in their proposals. The United States was represented by Dr Harvey Fletcher, then vice-chairman of the ASA Sectional Committee on Acoustical Measurements and Terminology, Z24.

The Subcommittee on Concert Pitch met in London in 1939, with representatives from France, Germany, Italy, The Netherlands, and Great Britain. Bringing science as well as art to bear, the members unanimously agreed to recommend an international standard of concert pitch based on a frequency of 440 cps for the note A in the treble clef. It was anticipated that this proposed standard would be submitted to the main committee, ratified by it and presented to the international committee for formalization as an international standard. World War II prevented this action, however, and further work on the establishment and acceptance of this standard is in the hands of the ISO.

The United States has been using A-440 since 1936, when it was approved as a part of the American Tentative Standard Acoustical Terminology. It was reapproved as American Standard in 1942. Pianos, organs, and other musical instruments are accurately keyed to this pitch and any change would mean tremendous manufacturing revision. Mr Downes quotes one instrument maker as saying that if he were forced to make still another change in standard pitch for his brass instruments it would cost him an immense sum for conversion of factory machinery.

A-440-Plus Strains Piano

The standard pitch is not likely to rise above 440 cps. Again citing Mr Downes, the difference in string tension of a piano pulled up from A-435 to A-440, with a proportionate change in the whole scale, is about two thousand pounds. To quote Paul Bilhuber of Steinway & Sons, "An increased five cps [over 440] in the frequency of the standard A, with a corresponding change in the entire scale, would throw an additional strain of something like half a ton on the framework of the instrument." The piano has to be strong enough to stand a tension of 320,000 to 375,000 pounds per square inch as it is. The piano manufacturers would not stand for much increase in pitch.

Nor would the pianists welcome it. One harried artist playing with Serge Koussevitsky and the Boston Symphony Orchestra, who tune to an A of about 444 cps, was in anguish, expecting a piano string to break under his hands. And singers, subjected to a higher-pitched accompaniment, must eventually either strain their voices or have the accompaniment transposed to a lower key.

Maintenance of the standard pitch is aided in this country by frequent high-accuracy broadcasts of A-440 over National Bureau of Standards radio station WWV, which enable musicians to tune their instruments correctly. In Great Britain it is broadcast each morning from the Droitwich long-wave national transmitter.

A table showing the frequencies of tones of the usual equally tempered scale, calculated according to American Standard pitch, is included in the Proposed American Standard Acoustical Terminology.

Book Reviews

ASTM Standards on Paper and Paper Products (with Related Information), 4th edition. (American Society for Testing Materials, 1916 Race Street, Philadelphia 3, Pa., $2.50)

All 77 specifications and test methods developed by several ASTM technical committees, particularly Committee D-6 on Paper and Paper Products, are contained in this 286-page book. There are also a number of standards of Committee D-9 on Electrical Insulating Materials.

Included are specifications on lime for cooking rags in paper manufacture; waterproof paper for curing concrete; round phenolic laminated tubing for radio applications; laminated thermosetting materials; and vulcanized fibre sheets, rods, and tubes for electrical insulation.

Some of the test methods covered are for bulking thickness; machine direction; sampling; ash content; opacity; folding endurance; grease resistance; bursting and tensile breaking strength; and flammability.

Standards of Hydraulic Institute. 8th edition. (Hydraulic Institute, 90 West Street, New York 6, N. Y., $3.00)

This completely revised edition consists of six sections: General Information, Centrifugal Pump Section, Rotary Pump Section, Reciprocating Pump Section, Data Section, and Pipe Friction Section. The Pipe Friction Section has been issued as a tentative standard, the result of an investigation made during 1946-47 to revise the pipe friction data formerly in the Data Section.

Minimum Standards for School Buses, 1948 Revised edition. (National Commission on Safety Education, National Education Association, 1201 Sixteenth Street, N. W., Washington 6, D. C., $0.35)

Standards for school bus construction, offered for adoption by state legislatures, have appeared in a revised edition. The bulletin was developed by the National Conference on School Transportation, held in October 1948. Representatives of 44 state departments of education, school bus manufacturers, and safety consultants attended.

The 62-page booklet covers the objectives, guiding principles, and use of minimum standards, recommendations for construction of both large and small vehicles, and uniform traffic regulations as revised by the conference.

The National Commission on Safety Education advises that all supervisors and school administrators directly responsible for school transportation should be acquainted with this material.

Building Materials and Structures Report BMS 113, Fire Resistance of Structural Clay Tile Partitions (Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., $0.15)

Results of fire endurance tests carried out by the National Bureau of Standards on 20 structural clay tile partitions are published in this report. Until recently, little has been known on the fire-resistant properties of nonbearing structural clay tile partitions. In all, 20 partitions of representative commercial materials in three different thicknesses were tested. The booklet contains eight chapters describing the construction of partitions and equipment, materials, and test methods, concluding with a discussion of results.

Our Chinese Brother

Despite the state of internal disruption of the nation, the Chinese National Bureau of Standards, with headquarters in Nanking, brought out No. 11 issue of the magazine Standardization in October 1948.

The articles cover such subjects as standardization in government purchasing, standardized number of revolutions of machine tools, system of yarn number, calibration of liquid measures, and domestic and foreign news.

Can Technical Requirements in Local Laws Legally Be Kept Up to Date?

ASA Committee on Model Laws and Ordinances has studied how obsolete technical requirements in state laws and local ordinances affect business and public; new booklet just issued gives views of experts on possible solutions; committee asks for comments

BECAUSE of the costly restrictions suffered by many industries from out-of-date and nonuniform local regulations, a committee of the American Standards Association has just issued an analysis of the question "How can nationally recognized standards legally be used in state laws and local ordinances?" The committee has come to no decision and is making no recommendations but hopes that the booklet will bring comments and suggestions that may help to solve the problem. Every industry or group that has found its business hampered by varying local requirements and by regulations that make it necessary to supply out-of-date or nonstandard materials will be interested in studying the suggestions offered by the group of experts. They are invited to send their comments to the American Standards Association.

Four Principal Papers Analyze Legal Problems

Four principal papers are included in the booklet. *Nationally Recognized Standards in State Laws and Local Ordinances.* They show how lack of uniformity in technical requirements both increases costs to industry and the public, and also reduces public safety. They analyze the need for legal methods that will permit widespread use of nationally recognized standards; summarize the present status of the "adoption by reference" method; and discuss the legality of several methods that have been followed in using national codes and standards as a basis for local regulations. Titles and authors of the papers are:

Economic Effects of Lack of Uniformity of Acceptance of Nationally Recognized Codes and Standards (on Manufacturers of Building Materials and Equipment, on Distributors, and on Industrial and Commercial Users). By F. Stuart Fitzpatrick, manager of the Construction and Civic Development Department, Chamber of Commerce of the U. S.

Effects on the General Public, on Public and Private Building Agencies, and on the Home Owner of Lack of Uniformity of Acceptance of Nationally Recognized Codes and Standards. By Leonard G. Haeger, Director, Technical Staff, Housing & Home Finance Agency

Municipal Adoption of Codes by Reference. By Roy H. Owsley, Associate Director, American Municipal Association

The Constitutional and Legal Problems Surrounding the Use of National Codes and Standards by States and Municipalities. By R. R. Irvine, Donovan, Leisure, Newton, Lumbard & Irvine, New York

In addition to the four principal papers, excerpts are included from several model statutes and ordinances proposed by organizations that have been working on the problem. The National Electrical Manufacturers Association, the National Institute of Municipal Law Officers, the Pacific Coast Building Officials Conference, and the Council of State Governments have all made proposals on the subject.

"A manufacturer who seeks wide distribution of his products is materially affected by the legal requirements his products must satisfy throughout his market area," Mr Fitzpatrick explains in describing the economic effect of lack of uniform acceptance of nationally recognized standards. If state and local requirements are relatively uniform, a manufacturer can produce for a mass market and can thus enjoy the benefits of simplification and standardization. However, if local requirements vary to a considerable degree, he must diversify his output and produce each item in smaller quantity, often at higher cost. He may even find himself shut out of some localities where codes prohibit the use of certain materials or methods, as is the case in some instances with welding, plywood, light-gage steel, armored cable, and light-weight aggregates. The National Electrical Code is an outstanding example of one of the nationally recognized standards that have been generally adopted throughout the United States, Mr Fitzpatrick points out. Since at the present time there is no way legally to adopt future editions of a national standard in a state law or local ordinance, there is still no solution to the problem of keeping the local codes up to date with changes which are made from time to time in a national code. As one example of how expensive it can be to industry when a local government puts into effect special requirements not in accordance with a nationally recognized standard, Mr Fitzpatrick cites a charge of some \$30,000 for an installation not required by the National Electrical Code in one case where a local ordinance did not recognize the provisions of the Code.

Public Suffers Through Unsafe and Costly Practices

Obsolete building regulations are of prime importance, as far as the public is concerned, declares Mr Haeger. Not only do they restrict the use of new materials and methods of construction but they endanger the public, as evidence in recent hotel disasters. The fact that many state and local building codes do not reflect up-to-date engineering knowledge prevents more economical use of materials. As a result, materials and labor going into the construction cost are increased without increasing the efficiency or safety of the structure. In many communities prefabricated houses cannot be erected because they do not conform to traditional practice even though they have met recognized tests for stability and strength. Lack of uniform requirements in plumbing codes has caused variations of as much as 150 percent in requirements for sizing of pipes. These variations cause producers to manufacture

many different sizes and distributors to carry a heavy inventory. Mr Haeger declares that estimates show that an average saving of $50 per dwelling would be possible in an average community if the plumbing were designed according to the requirements of a uniform plumbing code.

The requirement by many states that municipal ordinances must be published in a newspaper or other public document has frequently caused cities to adopt incomplete and unsatisfactory building and safety codes. Mr Owsley in his paper quotes some figures from a 1947 issue of the *Denver Post:* "It costs a city $2,239, and a town $1,343, to take advantage of the Uniform Pacific Coast Building Code; a city pays $1,237, and a town pays $742, to publish the United States Milk Code; a city pays $364, and a town pays $218, to publish the Model Traffic Code on Street and Highway Safety; a city pays $831, and a town $498, to publish the Fire Prevention Code printed by the National Board of Fire Underwriters; and a city pays $4,792, and a town $2,875, to publish the Flammable Liquids Code recommended by the National Board of Fire Underwriters." The paper comments, "These costs seem unreasonable to the town receiving only $800 a year from tax sources."

15 States Permit Adoption of Codes by Reference

Because of this cost, the legislatures of 15 states have passed enabling acts authorizing municipalities to adopt codes by reference, although some of these 15 restrict the type of standards that can be adopted in this way. In cases where standards are adopted as part of an ordinance without publication in a local newspaper, copies of the code must be filed in a public office so that they will be readily available to the public. Mr Owsley gives a careful analysis of the variations that exist in the practice of adopting a standard by reference. In every case, he points out, reference must be to a particular edition of a standard or code and cannot in any case authorize the adoption of future editions. This has not only been specified in many of the state enabling acts but also has been laid down in court decisions whenever the question has come up. Despite the wide recognition of the procedure of adopting a standard by reference, the courts in some states have handed down decisions that seem to rule against the procedures in those states.

Nationally Recognized Standards in State Laws and Local Ordinances, a report of Committee Z56 on Model Laws and Ordinances, published by the American Standards Association, is available at the following prices: Single copies, $1.00; to ASA members, 85 cents; more than 50 copies, 70 cents per copy.

Mr Owsley concludes, "These considerations, coupled with the fact that existing publication requirements in some jurisdictions constitute an extremely serious deterrent to local adoption of the numerous excellent technical codes developed by nationally recognized experts in their respective fields, make a strong case for the early legislation of the adoption by reference procedure in all states."

Future Editions Cannot Legally Be Adopted

Mr Irvine emphasizes the fact that the movement to enable municipalities in all states to adopt codes and standards by reference is growing. But, he points out, this method does not help to keep state and local regulations up to date with new developments since court decisions have established the policy that no state or municipality can legally adopt by reference future editions of a code. Therefore, in order to put new editions into effect the law or ordinance in which they are mentioned must be revised. And experience shows that this is not done frequently enough to keep them up to date. Mr Irvine points to the fact that the 1897 edition of the National Electrical Code is still in force in one Ohio town.

As an alternative, Mr Irvine suggests a different approach. This would make compliance with a national standard *prima facie* evidence that the requirements of the law had been met. By this method an ordinance or statute would require that a standard of duty established by the legislative body shall be met—for example, installations of electrical equipment shall be "reasonably safe" to persons and property. It then would declare that compliance with the requirements of the National Electrical Code, for example, shall be *prima facie* evidence that the installation is "reasonably safe to persons and property." By this method the requirement always remains the same whereas the methods or materials used in making the condition "reasonably safe" may change with changes in technical developments.

In Mr Irvine's opinion this type of provision will pass constitutional and common law tests, and the *prima facie* provision would have the additional advantage of making codes and standards admissible in evidence. To make sure that such a statute cannot be open to attack, however, Mr Irvine suggests that it should include the reasons why the legislative body chose that particular code as authoritative basis for *prima facie* evidence. He suggests that a statement of the "impartial nature and recognized authority of the associations sponsoring the code or standard" and a description of the "all party in interest procedure which leads to approval by the American Standards Association" would provide a firm basis in authority and impartiality for use of the code or standard. As a result, the statute or ordinance could not then be attacked as an arbitrary use of its power by the legislative body, in his opinion.

The booklet, *Nationally Recognized Standards in State Laws and Local Ordinances*, is a report by ASA Committee Z56 on Model Laws and Ordinances. This committee is engaged in a study of procedures whereby the use of nationally recognized standards and their latest revisions may be put into effect in state laws and local ordinances for the purpose of promoting uniformity of technical requirements throughout the country.

Comments and suggestions received as a result of publication of this report will be used by the committee in preparing its final recommendations.

New NBS Standard Hydrocarbon Samples

Through a cooperative program begun in 1943, the National Bureau of Standards and the American Petroleum Institute have prepared a total of 156 compounds now available as NBS standard samples of hydrocarbons. They are used for calibrating analytical instruments and apparatus in the research, development, and analytical laboratories of the petroleum, rubber, chemical, and allied industries. A complete list of NBS standard samples of hydrocarbons, together with instructions for ordering, may be obtained from the National Bureau of Standards, Washington 25, D. C.

Standards Received From Other Countries

MEMBERS of the American Standards Association may borrow from the ASA Library copies of any of the following standards recently received from other countries. Orders may also be sent to the country of origin through the ASA office. The titles of the standards are given here in English, but the documents themselves are in the language of the country from which they were received.

For the convenience of our readers, the standards are listed under their general UDC classifications.

003 Writing

France

Railway Materials. Graphical Symbols for Rolling Stock, NF FO1-053
Fixed Railway Installations. Graphical Symbols for Electric Traction Installations, NF FO5-003

51 Mathematics

Czechoslovakia

Application of Correlation Calculus, CSN 2241

France

Decimal Subdivision of the Angle, FD XO2-010

543 Analytical Chemistry

Sweden

Oils and Fats. Determination of Saponification Number, SIS 1502 04

Union of Soviet Socialist Republics

Drinking Water. Method of Analysis for Determination of Magnium Content, GOST 3820-47
Drinking Water. Method of Analysis for Determination of Iron Content, GOST 4011-48
Drinking Water. Method of Chemical Analysis for Determination of Water Hardness, GOST 4151-58
Drinking Water. Method of Chemical Analysis for Determination of Presence of Arsenic Containing Substances, GOST 4152-48
Drinking Water. Method of Chemical Analysis for Determination of Presence of Nitrate Containing Mineral Substances, GOST 4192-48

614.8 Prevention of Accidents. Safety Measures

Argentina

Pump Type Carbon Tetrachloride Extinguisher, IRAM 3507-N. I. O.

The Netherlands

Fire Equipment. Cap and Fire-Box Coupling to Pressure Main, N 340
Fire Equipment. Hatchet With Sheath and Emergency Nail, N 1399
Fire Equipment. Spanner Belt and Hose Strap, N 1400
Fire Equipment. Portable Hose Reel, N 1401
Fire Equipment. Hose Reel on Wheels, N 1402
Fire Equipment. Fireman's Life Belt, N 1403
Fire Equipment. Hook, N 1404
Fire Equipment. Suction Strainer, N 1405
Fire Equipment. Spanner for Hose Coupling, N 1464
Fire Equipment. Life Line, N 1468

620.17 Physico-Technological Investigation. Tests of Strength

Argentina

Bending Test of Metals, IRAM 103-N. I. O.
Compression and Flexure Test of Concrete Specimen Made and Cured in the Field, IRAM 1524-P
Sieve Analysis and Test for Water Content of Refractory Materials, IRAM 1544-P

United Kingdom

Bending Dimensions of Bars for Concrete Reinforcement, BS 1478-1948

621.1 Steam. Steam Engines. Boilers

Germany

Seamless Pipes for Liquid and Steam, DIN 2443
Man Hole Access Door 450 x 450 and Details, DIN 2921, Sh 1 and 2
Explosion and Access Door for Man Hole 450 x 450 and Details, DIN 2922, Sh 1 and 2
Details of Steamboilers Man Hole Doors, DIN 2923
Internally Fired Boilers. General, DIN 2904, Bl.1, 2

621.3 Electrical Engineering

Argentina

Orders and Offers for Rotating Electric Machines and Transformers, IRAM 2019-N.P.

France

Rules for the Installation and Use of Removable Connection to Overhead Lines, NF C17
Rules for Installation of Circuit Breakers for AC Circuits of 1000 V and Up, NF C22
Rules for Installation of X-Ray Generators and Accesories, NF C84
Rules for Radiologic, Electrologic and Actionologic Installations, NF C96
Program of Test of Measuring Instruments Used in Telecommunication, NF C97
Protective Measures Against Accidental Defect of Grounding of Metal Parts of Equipment, NF C307

The Netherlands

Specifications for Overhead High Voltage Transmission Lines, N 1060

Union of Soviet Socialist Republics

DC Motors for Cranes and Metallurgy, GOST 184-47
Three-Phase Asynchronous Motors for Cranes and Metallurgy, GOST 185-47
Automobile and Tractor Wiring Harness, Low Voltage, GOST 97-47
Electric Cables for Signal and Blocking Use, GOST 985-47
Swan Socket for Electric Lamp, GOST 1149-47
Railroad Electric Incandescent Lamp, GOST 1181-48
Marine Type Electric Incandescent Lamps, GOST 1608-47
Axle Heights of Electric Machines and Direct-Coupled Non-Electric Machines, GOST 3729-47
Taper Shaft Ends of Electric Machines, GOST 3730-47
High-Tension Ignition Harness for Automobiles and Tractors, GOST 3923-47
Electrical Equipment for Automobiles, Tractors, and Motorcycles. Basic Standard, GOST 3940-47
Magnetos for Working and Starting Tractor Motors, GOST 3941-47
Starting Accelerators for Tractor Magnetos, GOST 3942-47
Short-Circuiters for Tractor Magnetos, GOST 3943-47
Electric Incandescent Lamps for Motion Picture Projectors, GOST 4019-48

621.6 Apparatus for Conveyance and Storage of Gases and Liquids. Conduits and Pumps

Argentina

High-Carbon Steel Cylinders for Permanent Gases, IRAM 2533-P
Concrete Pipes. General Specifications, IRAM 1506-N.I.O.
Threaded Steel Pipes and Coupling for General Use, IRAM 2502-N.P.
Asbesto-Cement Pipes for Low-Pressure Liquid, Ventilation and Gases, IRAM 1518-P
Reinforced Concrete Pipes for Culverts, IRAM 1523-P

France

Symmetric Coupling, Type 40 and 65 for Discharge Rising Pipe, FD E29-24
Symmetric Coupling, Type 100, for Suction and Discharge Pipes, FD E29-25

United Kingdom

Solid Drawn Aluminum Brass and Admiralty Mixture Brass Tubes for the Petroleum Industry, BS 1464-1948
Flexible Metallic Tubing for Use in the Petroleum Industry, BS 1465-1948

621.7 Workshop Practice

France

Wooden Box for Camembert Cheese, NF H21-008
Cast Iron Piping. Mechanical Test Methods, NF A38-001

Union of Soviet Socialist Republics

Tolerances and Fits for Diameters Less Than 1 Mm, GOST 3047-47
Indicators for Contour Checking, GOST 3899-47
Fillet and Radius Gages, GOST 4126-48
Metal and Glass Containers for Preserved Food, GOST 1506-47
Pasteboard Packing Boxes for Radio Receivers, GOST 4112-48

(Standards Received From Other Countries, continued)

621.8 Machine Parts. Hoisting and Conveying Machinery. Power Transmission. Means of Attachment. Lubrication

Argentina

Rivets. Classification, IRAM 514-N.I.O.
Screws. General Nomenclature, IRAM 542-P

Austria

Hexagonal Nuts, Unfinished, Onorm M5210
Square Nuts, Unfinished, Onorm M5213

Germany

Pliers, DIN 7210
Round Headed Rivets. 10 to 36 Mm in Diameter Used in Steel Constructions, DIN 124, Bl.1
Round Headed Rivets. 10 to 36 Mm in Diameter Used in Boiler Making, DIN 123, Bl.1
Countersunk Head Rivets. 10 to 36 Mm in Diameter, DIN 302, Bl.1
Woodruff Keys, DIN 6888

Sweden

Round Thread. Dimensions, SMS 681
Various Wire Nails, SMS 1382 through 1387

United Kingdom

Lubricating Nipples and Adaptors, BS 1486-Part 1-1948
Heavy Duty Lubricating Nipples, BS 1486-Part 2-1949

621.9 Machine Tools. Tools. Operations, in Particular for Metal and Wood

Austria

Carbon Steel Twist Drill, Short, Straight Shank, Onorm M4201
High Speed Twist Drill, Short, Straight Shank With Tang End, Onorm M4202

The Netherlands

Machine Tool. Spindle Nose With Steep Taper, N 1309

United Kingdom

The Attachment and Drive of Circular Metal Cutting Saws for Cold Working, BS 387-1948

623.83 Naval Construction. The Hull and Accessories

France

Inner Metal Partitions, NF J35-112
Wood Framing for Metal Partitions, NF J35-114
Single Wooden Partitions, NF J35-122
Single Wooden Partitions With Grille or Persiennes, NF J35-123
Double Wooden Partitions, NF J35-125

629.12 Ships and Ship Building

France

Dog Bolts for Hinged Covers, Etc. Standard Types and Dimensions of Component Parts, NF J31-401 through J31-406

The Netherlands

Shipbuilding Details. Auxiliary Engines for Steering Gear. General Rules, N 926

629.13 Aircraft Engineering

France

Installation of Fluids on Board Airship. Details of Flanged Filler Cap Seats on Tanks, Etc, NF L121-00 through L121-09
Installation of Fluids on Board Airship. Pipe Coupling, Etc, NF L170-90 through L170-92
Installation of Fluids on Board Airship. Flexible Pipings, Etc, NF L171-00 through L171-09
Installation of Fluids on Board Airship. Coupling for Attaching Filler Pipe Under Pressure. 44 Mm Size, NF L171-30.1
Size and Style of Various Signs, NF L400-03

64 Domestic Science. Housekeeping

France

Food Storage Cabinet, NF D24-305
Furniture. Metal Cloth Cabinets, NF D65-760

Germany

Standard Types of Kitchen Pots, Pans, Etc, DIN 6000

Sweden

Principle Outside Dimensions of Electric and Gas Stoves and Their Connections, SIS 6052 06

Union of Soviet Socialist Republics

Household Gas Stoves. Specification, GOST 4137-48
Galvanized Steel Household Utensils. Dimensions and Specifications, GOST 4175-48—4183-48

661 Chemical Products

Argentina

Normal Butyl Alcohol, IRAM 1039-N10

France

Liquefied Hydrocarbons. Method of Sampling, NF M41-001
Liquefied Hydrocarbons. Determination of Vapor Pressure, NF M41-005
Liquefied Commercial Propane. Mercury Drop-Test, PN M41-002
Liquefied Commercial Butane. Distillation Test, PN M41-003
Gaseous Commercial Propane. Test for Water Content, PN M41-004
Commercial Butane. Sodium Plumbate and Sodium Sulfate Tests, PN M41-006

Hungary

Sulfur Dioxide, MOSz 904
Ammonia, MOSz 905

662 Pyrotechnics. Explosive Materials. Combustibles

Czechoslovakia

Screening of Coal and Coke, CSN 1420

France

Mine Detonators, NF T70-003
Electric Detonators, NF T70-004
Solid Fuels (Two Diagrams Corrected), Corrigendum to NF MO3-016

Germany

Glass Fiber Sheets, DIN 3745

Union of Soviet Socialist Republics

Anthracites of Donetz Region for Stationary Gas Generators, GOST 3846-47
Coke. Test Method for Determination of Volatile Substances, GOST 3939-47
Anthracites and Brown Coals of the Eastern Regions for Stationary Gas Generators, GOST 4104-48

United Kingdom

Coal Tar Liquid Fuels, BS 1469-1948

666 Glass and Ceramic Industry. Artificial Stone

France

Chemical Analysis of Refractory Products, NF B49-441

Germany

Bottles for Ink, DIN 6062

Union of Soviet Socialist Republics

Colored Glass Sheets for Railroad Light Filters, GOST 3692-47
Stove Tiles. Specifications, GOST 3742-47
Graphite Crucibles, GOST 3782-47 and 3783-47
Water-Closet Bowl. Type and Dimensions, GOST 3844-47
Refractory Material for Glass Melting Furnaces, GOST 3910-47
Ceramic Bases for Household Electric Plates, GOST 3955-47
Fireproof Products and Materials. Test Method for Determination of Resistance to Fire, GOST 4069-48
Fireproof Products and Materials. Test Methods for Determination of Deformation Under Load and at High Temperature, GOST 4070-48
Fireproof Products and Materials. Test Methods for Determination of Compression strength, GOST 4071-48
Refractory Materials for Lining of Furnaces. Classification and Specification, GOST 4157-48
Kaolin of "Kyshtym" Region, GOST 4193-48

667.6/.8 Paints, Varnishes. Lacquer. Polishing Materials

Argentina

Organic Paint Remover, IRAM 1053-N10
Red Lead Pigment for Paint, IRAM 1011-N.I.O.
Red Iron Oxide Pigment, IRAM 1015-P
Red Lead Paste in Oil, IRAM 1052-P
Shellac (Orange and White) IRAM 1064-P
Lamp-Black Paste in Oil, IRAM 1069-P
Prussian Blue Paste in Oil, IRAM 1080-P
Ultramarine Blue Paste in Oil, IRAM 1081-P

France

Abrasion Test for Paint Film NF 30-015
Hardness Test for Paint Film NF 30-016
Bending Test for Paint Film NF 30-019
Determination of Specific Gravity of Paint, NF 30-020

669 Metallurgy

Argentina

Malleable Iron Castings, IRAM 526-N.P.

Czechoslovakia

Structural Steel, CSN 1510
Carbon Steel for Engineering Purposes, CSN 1511

Germany

Half-Round Polished Steel Rods for Making Woodruff Keys, DIN 6882

United Kingdom

Tin Salts for Electroplating, BS 1468-1948

ASA Moves for Standard Sizes

Standards Council adopts 8½ x 11 in. for American Standards in pamphlet form; 6 x 9 in. for books; urges Member-Bodies and sponsors to work toward uniform sizes for all standards

WITH the adoption of three standard sizes—one for pamphlets, one for books, and one for pocket-size books—the American Standards Association has acted to bring about greater uniformity in the size of American Standards. At present, American Standards are published in some 20 different sizes by the many national organizations that are active in the program.

The three sizes adopted by ASA as standard are:—8½ x 11 in. for pamphlets; 6 x 9 in. for books; and 5¼ x 7¾ in. for pocket-size books.

The majority of American Standards published by the Association itself will be 8½ x 11 in., the pamphlet size. This size has been adopted on the basis of a questionnaire answered by a large percentage of the primary users of American Standards. The replies indicated that use of the 8½ x 11 in. size would make it convenient for business and industry to incorporate American Standards directly into their own books of standards and to combine them directly with correspondence, proposals, and drawings without having to reproduce them in a different size. This direct use of the standards would make it more economical to put new American Standards into effect.

The standard 6 x 9 in. size for those American Standards published in book form was chosen as the size most easily used on desks and bookshelves. It also follows the practice of many of the organizations which publish compilations of standards.

The 5¼ x 7¾ in. pocket size, although not wisely used, is considered to be valuable in a few special cases.

Through its action in approving these standards, the American Standards Association strongly urges all ASA Member-Bodies, as well as other national organizations serving as sponsors for work on standards, to use these three sizes in publishing their own standards as well as those approved as American Standard.

The action of the Standards Council in adopting these three sizes was taken on recommendation of a Special Committee on Sizes of American Standards and Vendors' Catalogs. This committee first served under the chairmanship of the late Ralph G. McCurdy, Bell Telephone Laboratories, and recently with Thomas Spooner, Westinghouse Electric Corporation, as chairman. It was appointed as the result of a request from the Company Member Conference, which is made up of engineers directly in charge of standardization work in ASA member companies. Their opinion that adoption of standard sizes would help them in using American Standards was given serious attention by the Council.

The Council's Special Committee is still working on its assignment. It has yet to bring before the Council a recommendation as to how American Standards should be designated so they can be easily identified; and has under consideration action on binders and standard punching and on sizes of vendors' catalogs.

Geophysical Group Requests Sectional Committee

The American Geophysical Union has requested that its Subcommittee on Permeability, organized under the Permanent Research Committee on Ground Water of the Section of Hydrology, be established as a sectional committee under the American Standards Association, with the American Geophysical and the Geological Society of America serving as joint sponsors.

The objectives of the committee are set as follows:

(1) Define the term "permeability" and outline the mechanics of fluid permeation as restricted to ideal homogeneous fluids and to media with which there is no interaction.

(2) Establish a standard unit of permeability and the mathematical symbol of permeability.

(3) Rename other terms that have been called "permeability" in the past.

It is believed that through the independent and uncoordinated effort of workers in the fields of agronomy, groundwater hydrology, petroleum engineering, and other fields, confusion had arisen in the notation and nomenclature of permeability and also in the units of measurement.

ISO Appoints Technical Committee

A new Technical Committee on General Definitions Relating to Chemical and Physical Test Results has been set up by the International Organization for Standardization. Secretariat of the committee will be entrusted to the Netherlands Standards Association, which originally proposed that such a project be organized. It is the Netherlands' belief that great confusion has prevailed for a number of years in the use of concepts, such as accuracy, precision, repeatability, reproductibility, tolerance, etc. in reporting and interpreting chemical and physical test results and that the subject requires international agreement.

Cause Code Gains New Friends

Recent converts to the American Standard (Heinrich) Cause Code on accidents are the Illinois Department of Labor and the Illinois Industrial Commission. Tossing a bouquet to the American Standards Association, the recently published *Annual Report on Industrial Accidents in Illinois* for 1947 states:

"In recent years the tendency has been away from the concept of *cause of injury* and toward *cause of accident.* For some years a new approach to the coding of accident causes, as promulgated by the American Standards Association and actively recommended by the U.S. Bureau of Labor Statistics, known as the Heinrich Cause Code, has received attention from many jurisdictions. Because the new cause-coding procedure is a parallel to an actual investigation of a cause by a safety engineer, it is doubtless a great improvement over the old method in many respects, even though it still looks forward to a reporting system of a nicety which at present does not exist.

"After long and careful consideration, the Illinois Department of Labor and the Illinois Industrial Commission have approved the new approach to statistical accident cause analysis. The Industrial Commission has already taken the first step in this direction by revising their First Report of Accident form so as to bring out the necessary cause data needed for accident prevention purposes. It is expected that the revised report form will be in fairly general use beginning in 1949. Meanwhile, the old cause of injury code will be compiled in our compilation of accident statistics for 1947 and 1948."

British Get Test Film Standard

A British Standard comparable to the corresponding American Standard was issued recently for Test Films for 16 mm Cinematograph Projectors. The following paragraph was included in the announcement:

"These test films, which were formerly available only from the U.S.A. and were difficult to obtain are now being manufactured in the United Kingdom. This will be of benefit not only to this country but to other countries which are short of dollars."

Veltfort Heads Procedure Committee

T. E. Veltfort, Copper and Brass Research Association, heads the Committee on Procedure which has the responsibility for keeping the methods by which national standards are developed through the American Standards Association in line with the principles and policies of the Association. Other members of the committee, just named for 1949, are Paul Arnold, Ansco Division of General Aniline & Film Corporation; E. H. Conarroe, Metropolitan Life Insurance Company; F. J. Graf, Assistant Vice-President and Chief Engineer, Massachusetts Bonding & Insurance Company; H. E. Kent, Edison Electric Institute; R. G. Kimbell, Director of Technical Services, National Lumber Manufacturers Association; and W. P. Kliment, Engineer of Standards, Engineering & Research Division, Crane Company.

Hoffman Joins ASA Staff

S. David Hoffman has joined the engineering staff of the American Standards Association, Electrical, Electronics, and Photography Division.

Mr Hoffman was formerly an equipment engineer with the Western Electric Company for two and a half years. Prior to that he was an electrical division officer aboard a heavy cruiser with the U.S. Navy. During his Naval service, which extended from November 1942 to May 1946, Mr Hoffman completed the V-12 program at Yale University, receiving a B.S. in electrical engineering in 1945.

Before the war, Mr Hoffman was an electrical design draftsman on power stations for the American Gas & Electric Service Corporation for three years. He also attended the Cooper Union Night School of Engineering for two years.

Indian Standards Institute Activities

In the Textile Field

The completion of its first draft standard in the field of textiles has been announced by the Indian Standards Institution. Entitled "Draft Indian Standard for Method of Test for Shrinkage of Woven Cotton Cloth in Laundering," it has been prepared by a sectional committee of the Textile Division Council of the Institution.

The object of the test specified in this draft is to provide a uniform method of estimating shrinkage on laundering of woven cotton cloth in order that manufacturers may be able to make due allowances in every type of fabric produced by them.

Every draft specification is issued for a trial period of not less than three months with a wide circulation among interested groups in order to obtain comments and criticism. This draft was sent to industrialists and technologists in the textile field.

For Quality Control

The Indian Standards Institution has adopted the American War Standard Control Chart Method of Controlling Quality During Production, Z1.3-1942, as a national standard and copies have been published by that organization for use in India.

To Draft Cement Specifications

An ISI sectional committee on cement has appointed a subcommittee to draft specifications for the following types of cement: ordinary portland cement; rapid-hardening cement; low-heat cement; and blast-furnace portland cement.

Mitchell Is Chief of NBS Fire Protection

N. D. Mitchell, formerly acting chief, has been designated chief of the National Bureau of Standards' Fire Protection Section.

Since he entered the Bureau in 1922, Mr. Mitchell, through fire tests of building materials and constructions, has made a number of important contributions in the fire protection field. One example is his investigation of the control of airplane hangar fires by the automatic application of water.

Mr. Mitchell has represented the Bureau on a number of technical committees of the American Standards Association, among them, the sectional committees on the Building Exits Code, A9; Standards for Safety in the Construction Industry, A10; and Standards for Grandstands, Tents, and Places of Outdoor Assembly, Z20. He is chairman of the latter committee. He also serves as representative for other organizations on the sectional committees concerned with methods of fire tests of building construction and materials, A2; building code requirements for fire protection and fire resistance, A51; for chimneys and heating appliances, A52; and reinforced concrete, A89.

Many Building Codes Permit Use of Light Gage Steel

More and more cities of the United States are permitting the use of structural members formed from sheet and strip steel, less than 3/16-inch thick, in certain types of buildings, reports *Steel Facts.*

Commenting on a recent survey made by the Committee on Building Codes of the American Iron and Steel Institute, the news letter points out that a dozen years ago few of the building codes in major cities and towns in this country allowed the use of such light steel members in construction work. Many of these codes contained antiquated rules based on practices of the past.

The survey shows that now in 113 cities of more than 25,000 population, 93 allowed the use of light gage steel construction.

Many of these follow the Specification for the Design of Light Steel Structural Members, issued by the American Iron and Steel Institute in April 1946.

ASA STANDARDS ACTIVITIES

Status as of February 28, 1949

American Standards Approved Since January 28, 1949

Plumbing Code, A40.7-1949
Sponsors: American Public Health Association; American Society of Mechanical Engineers

Unified and American Screw Threads for Screws, Bolts, Nuts and Other Threaded Parts, B1.1-1949 (Revision of B1.1-1935)
Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers

Straight Cut-Off Blades, B5.21-1949
Sponsors: Society of Automotive Engineers; Metal Cutting Tool Institute; National Machine Tool Builders Association; American Society of Mechanical Engineers

Chip Soap (ASTM D 496-39; ASA K60.1-1949
Ordinary Bar Soap (ASTM D 498-39; ASA K60.2-1949)
Powdered Soap (ASTM D 498-39; ASA K60.3-1949)
Compound Powdered Soap (Granulated, with Rosin) (ASTM D 691-44; ASA K60.9-1949)
Caustic Soda (ASTM D 456-39; ASA K60.10-1949)
Soda Ash (ASTM D 458-39; ASA K60.11-1949)
Trisodium Phosphate (ASTM D 538-44; ASA K60.12-1949)
Sponsor: American Society for Testing Materials

Sound Focusing Test Film for 35-Millimeter Motion Picture Sound Reproducers (Service Type), Z22.61-1949
Sponsor: Society of Motion Picture Engineers

Standards Being Considered for Approval

By the Standards Council—

Buzz-Track Test Film for 35-Mm Motion Picture Sound Reproducers, Z22.68
Sponsor: Society of Motion Picture Engineers

Acetic Acid, Glacial, Z38.8.100
Sulfuric Acid, Z38.8.101
Citric Acid, Z38.8.102
Boric Acid, Crystalline, Z38.8.103
Hydrochloric Acid, Z38.8.104
Acetic Acid, 28 Percent, Z38.8.106
Hydroquinone, Z38.8.126
Para-Hydroxyphenylglycin, Z38.8.128
Sodium Thiosulfate, Anhydrous, Z38.8.250
Sodium Thiosulfate, Crystalline, Z38.8.251
Aluminum Potassium Sulfate, Crystalline, Z38.8.150
Chromium Potassium Sulfate, Crystalline, Z38.8.151
Formaldehyde Solution, Z38.8.152
Paraformaldehyde, Z38.8.153
Sodium Sulfate, Anhydrous, Z38.8.175
Sodium Acetate, Anhydrous, Z38.8.176
Potassium Dichromate, Z38.8.177
Potassium Permanganate, Z38.8.178
Potassium Ferricyanide, Z38.8.179
Copper Sulfate, Z38.8.180
Potassium Persulfate, Z38.8.181
Sodium Sulfide, Fused, Z38.8.182
Potassium Bromide, Z38.8.200
Sodium Bisulfite, Z38.8.276
Sponsor: Optical Society of America

Specifications for Copper Pipe, Standard Sizes (ASTM B 42-47; ASA H26.1)
Specifications for Red Brass Pipe, Standard Sizes (ASTM B 43-47; ASA H27.1)
Specifications for Bronze Castings in the Rough for Locomotive Wearing Parts (ASTM B 66-46; ASA H28.1)
Specifications for Car and Tender Journal Bearings, Lined (ASTM B 67-46; ASA H29.1)
Specifications for Copper-Silicon Alloy Wire for General Purposes (ASTM B 99-47; ASA H30.1)
Specifications for Rolled Copper-Alloy Bearings and Expansion Plates and Sheets for Bridge and Other Structural Uses (ASTM B 100-47; ASA H31.1)
Specifications for Brass Wire (ASTM B 134-48; ASA H32.1)
Specifications for Leaded Red Brass (Hardware Bronze) Rods, Bars, and Shapes (ASTM B 140-47; ASA H33.1)
Specifications for Malleable Iron Castings (ASTM A 47-47; ASA G48.1-1948)
Zinc-Coated (Galvanized) Iron or Steel Sheets (ASTM A 93-46; ASA G8.2-1947)
Sponsor: American Society for Testing Materials

By the Board of Review—

Electrical Indicating Instruments, C39.1 (Revision of C39.1-1938)
Sponsor: Electrical Standards Committee

Building Exits Code, A9.1 (Revision of A9.1-1946)
Sponsor: National Fire Protection Association

By the Board of Examination—

Graphical Pipe Fittings, Valves, and Piping Symbols for Use on Drawings, Z32.2.3
Graphical Plumbing Symbols for Use on Drawings, Z32.2.2
Sponsors: American Society of Mechanical Engineers; American Institute of Electrical Engineers

Audiometers for General Diagnostic Purposes, Z24.5
Sponsor: Acoustical Society of America

By the Building Code Correlating Committee—

Building Code Requirements for Signs and Outdoor Display Structures, A60.1
Sponsors: American Municipal Association; Outdoor Advertising Association of America

By the Consumer Goods Committee—

Determination of Small Amounts of Copper, Manganese and Nickel in Textiles, L14.49
Cotton Goods for Rubber and Pyroxylin Coating, L14.50
Air Permeability of Textile Fabrics, L14.51
Methods of Testing Wool Felt, L16.1 (Revision of L16.1-1945)
Sponsor: American Society for Testing Materials; American Association of Textile Chemists and Colorists

By the Mechanical Standards Committee—

Brass or Bronze Screwed Fittings, 250 Lb, B16.17
Ferrous Plugs, Bushings, and Locknuts With Pipe Threads, B16.14 (Revision of B16.14-1943)
Sponsors: American Society of Mechanical Engineers; Heating Piping and Air Conditioning National Association; Manufacturers Standardization Society of the Valve and Fittings Industry

Letter Symbols for Gear Engineering, B6.5 (Revision of B6.5-1943)
Sponsors: American Society of Mechanical Engineers; American Gear Manufacturers Association

Standards Submitted to ASA for Approval

Test for Cone Penetration of Lubricating Grease, Z11
Test for Sulfated Residue, Lead, Iron and Copper in New and Used Suburating Oils, Z11
Chemical Analysis for Metals in Lubricating Oils, Z11
Test for Sediment in Fuel Oil by Extraction, Z11
Definition of Terms Relating to Petroleum, Z11.28 (Revision of Z11.24-1948)
Test for Knock Characteristics of Motor Fuels by the Motor Method, Z11.37 (Revision of Z11.37-1948)
Sponsor: American Society for Testing Materials

Practice for Photographic Processing Manipulation of Paper, Z38.8.6
X-Ray Sheet Film Hangers (Clip-Type), Z38.8.23
Photographic Exposure Computer, Z38.2.2 (Revision of Z38.2.2-1942)
Sponsor: Optical Society of America.

American Standard Reaffirmed

Method of Computing Food Storage Volume and Shelf Area of Automatic Household Refrigerators, B38.1-1944 R-1949
Sponsors: Bureau of Home Nutrition and Home Economics, U.S. Department of Agriculture; American Society of Refrigerating Engineers

Withdrawal of American Standards Being Considered

By the Standards Council—

Specifications for Gypsum Pottery Plaster (ASTM C 60-40; ASA A49.5-1940)
Specifications for Reduced Para Red (ASTM D 264-47; ASA K31.1-1947)
Specifications for Calcined Gypsum for Dental Plasters (ASTM C 72-40; ASA A65.1-1941)

By the Board of Review—

Gas Safety Code, K2-1927

Request for Withdrawal of Standard

Test for Tetraethyl Lead in Gasoline (ASTM D 526-42; ASA Z11-1948)

New Projects Requested

Magnet Wire, C9
Requested by: National Electrical Manufacturers Association

Uniform Specifications, Test Methods, and Quality Control Standards for Rayon Textiles
Requested by: National Retail Dry Goods Association

Permeability, Z59
Requested by: American Geographical Union

Withdrawal of Projects Requested

Standardizing Stock Sizes, Shapes and Lengths for Iron and Steel Bars, B41

Unification of Rules for the Dimensioning of Furnaces Burning Solid Fuels, B50
Sponsor: American Society of Mechanical Engineers

News About Projects

Wire and Cable, C8—

Sponsor: Electrical Standards Committee

TECHNICAL COMMITTEE No. 4 on *Rubber and Rubber-like Insulated Wire and Cable* works very closely with Subcommittee 5 of ASTM D-11. That group has recommended to the American Society for Testing Materials that several specifications for rubber insulation and rubber-like sheaths be advanced to Standards. As soon as that action is complete, or possibly before, Chairman Schatzel plans to hold a meeting of Technical Committee No. 4 to consider them from the ASA viewpoint. At the same time discussions will be started as to how best to meet an apparent need for American Standards for polyvinyl chloride and polyethylene thermoplastic insulations. There is hope that these can be ready for consideration by the sectional committee before the end of 1949.

TECHNICAL COMMITTEE No. 5 on *Impregnated Paper Insulated Wire and Cable* has been "marking time" awaiting completion of a revision, now in process, of the specifications for solid-type paper-insulated cables issued by the Association of Edison Illuminating Companies. This is the first revision since the war and it is expected that it will result in a specification that can be accepted as an American Standard.

TECHNICAL COMMITTEE No. 6 on *Varnished Cloth Insulated Wire and Cable* has completed its current assignment with the acceptance of IPCEA Specifications for Varnished Cambric Insulated Cables as American Standard, designation C8.13-1948. W. A. Del Mar, chairman, will be glad to receive comments or criticisms that may be helpful as a guide in making later revisions.

TECHNICAL COMMITTEE No. 12 on *Weatherproof Wire and Cable* has likewise completed its current assignment with the issuance of the Specifications for Weather-Resistant (Weatherproof) Wire and Cable (URC Type) (Revision of C8.18-1942), C8.18-1948. C. T. Sinclair expects to arrange for a meeting for a discussion of new developments in weather-resistant coverings.

TECHNICAL COMMITTEE No. 13 on *Heat-Resisting Wire and Cable Other Than Those With Rubber and Rubber-like Insulation* has under review a recent NEMA Standard for Asbestos and Asbestos-Varnished Cambric Wires and Cables.

Electric Lamp Bases and Holders, C81—

Sponsor: Electrical Standards Committee.

H. H. Watson of the General Electric Company has been appointed chairman of the Sectional Committee on this project, succeeding Dr Albert Brann, who found it necessary to resign because of illness. Mr Watson expects to hold the organization meeting of C81 in the near future.

Methods of Recording and Compiling Accident Statistics, Z16—

Sponsor: National Safety Council.

At the meeting of the sectional committee on February 2 in Washington, the subcommittees on the following sections of Z16.1 made their reports on recommended revisions: Section 2, Scope of the Code; Sections 3 and 4, Classifications and Time Charges; Sections 1, 5, and 6, Calculation, Exposure, and Compiling Rates.

The subcommittee on Z16.2, Part 1, Compiling Industrial Injury Charges, is testing its drafted revisions through actual use in coding, and made no formal recommendations at this meeting.

Following detailed discussion of Section 2, equally detailed decisions were made regarding it. A draft of this section as agreed upon at the meeting will be prepared and distributed to all committee members for comment, but not for letter ballot.

Because the phrase, "arising out of and in the course of employment", is a point of controversy, it was voted that the chairman appoint a subcommittee to draw up a definition or an example.

Graphical Symbols and Abbreviations for Use on Drawings, Z32—

Sponsors: American Institute of Electrical Engineers; American Society of Mechanical Engineers.

Subcommittee III on Abbreviations for Use on Drawings has met and considered all changes and additions submitted since the Z32.13-1946 standard was issued. A list of abbreviations to be added and other recommended changes has been sent to interested industries and organizations and to members of Sectional Committee Z32 for comments and suggestions.

Graphical Pipe Fittings, Valves, and Piping Symbols for Use on Drawings, Z32.2.3—

Sponsors: American Institute of Electrical Engineers; American Society of Mechanical Engineers.

The second of a group of standards which represent a revision and expansion of an existing standard, American Standard Graphical Symbols for Use on Drawings in Mechanical Engineering, Z32.2-1941, this proposed standard has been referred to the Board of Examination for recommendation to the Standards Council. In preparing the list of 71 symbols great care was shown to avoid conflicts with the symbols being assembled by committees in allied fields. Only those symbols about which there was nationwide consensus were used.

Safety Code Correlating Committee Approves Sponsors

The Safety Code Correlating Committee has approved new sponsors and co-sponsors for several projects, as a result of action started to find a replacement for the International Association of Industrial Accident Boards and Commissions, which has announced its withdrawal from code-making work and its resignation from sponsorship or co-sponsorship of ASA projects. The official sponsorships are now as follows:

Safety Code for the Use, Care and Protection of Abrasive Wheels, B7—

Sponsors: Grinding Wheel Institute; International Association of Governmental Labor Officials.

The Grinding Wheel Institute replaces the Grinding Wheel Manufacturers Association, which was dissolved.

Safety Code for Mechanical Power Transmission Apparatus, B15—

Sponsors: American Society of Mechanical Engineers; Accident Prevention Department, Association of Casualty and Surety Companies; International Association of Governmental Labor Officials.

Safety Code for Rubber Machinery, B28—

Sponsor: National Safety Council.

Safety Code for Woodworking Machinery, O1—

Sponsors: Accident Prevention Department, Association of Casualty and Surety Companies; International Association of Governmental Labor Officials.

Aerodynamics Handbook To Be Published

The Proposed American Standard Letter Symbols for Aeronautics and Aerodynamics, which were recently published for trial and criticism by American Standards Association, will be reproduced as the first section of a loose-leaf volume on aeronautics and aerodynamics to be released by the Applied Physics Laboratory of Johns Hopkins University.

Called the Aerodynamics Handbook, the publication will include all the available technical data on the related subjects. It will be distributed to all aviation companies, colleges, and other interested groups.

Captain Thomas Ball, chairman of Subcommittee 7 of Sectional Committee 10 on Letter Symbols and Abbreviations for Science and Engineering, and faculty member at Johns Hopkins, is supervisor of the Aerodynamics Handbook project.